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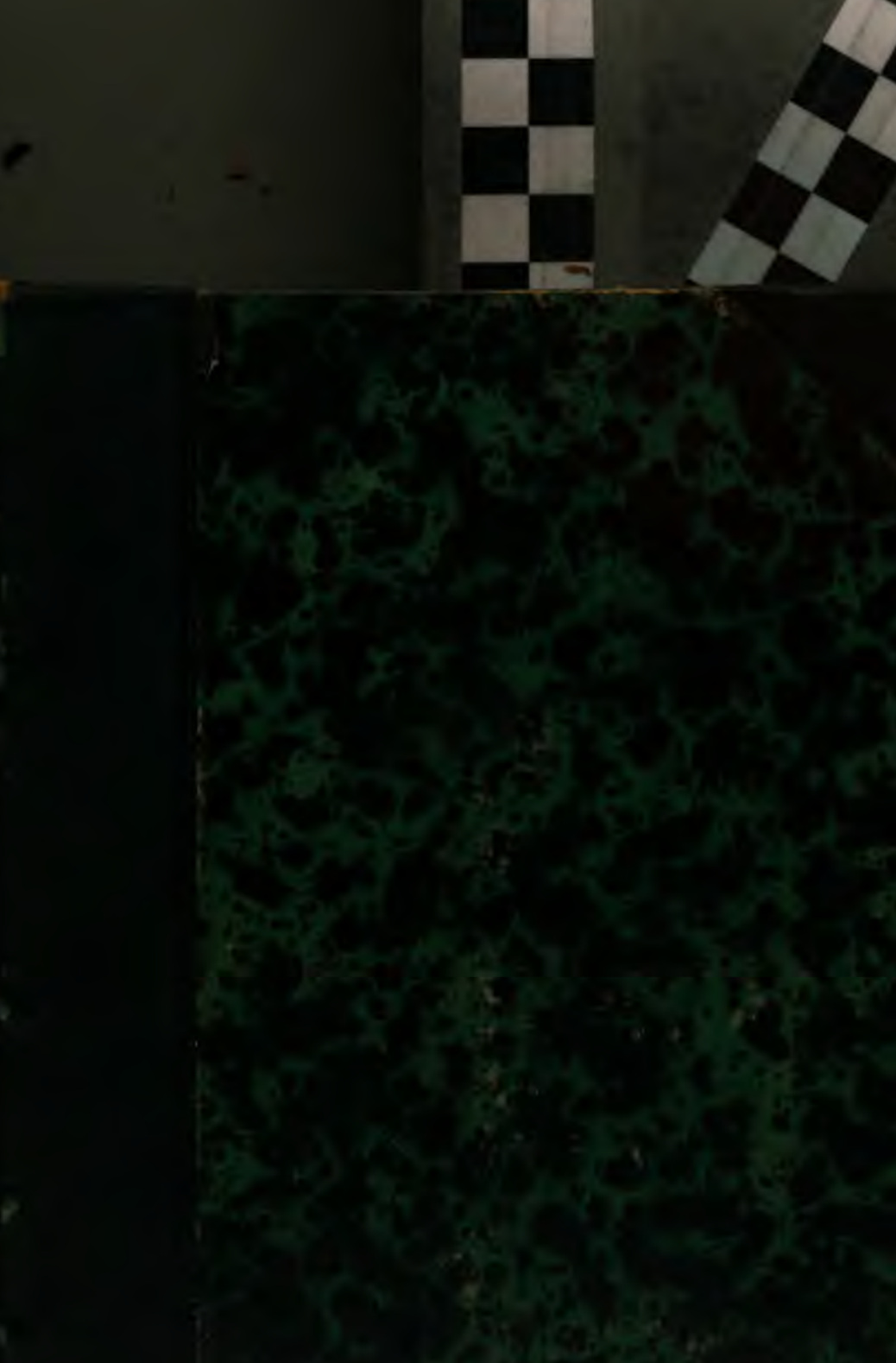

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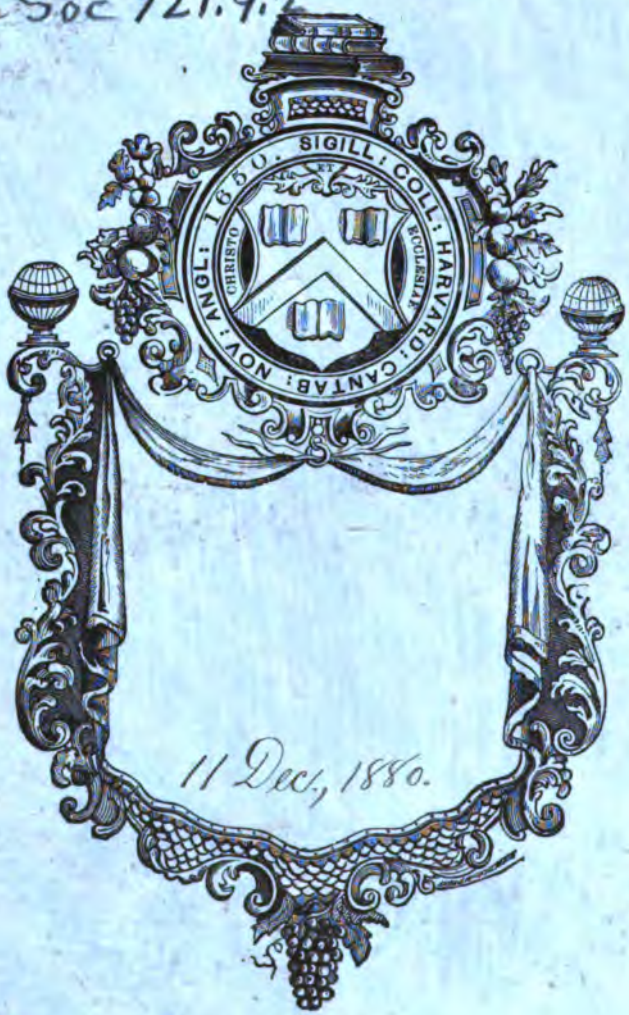

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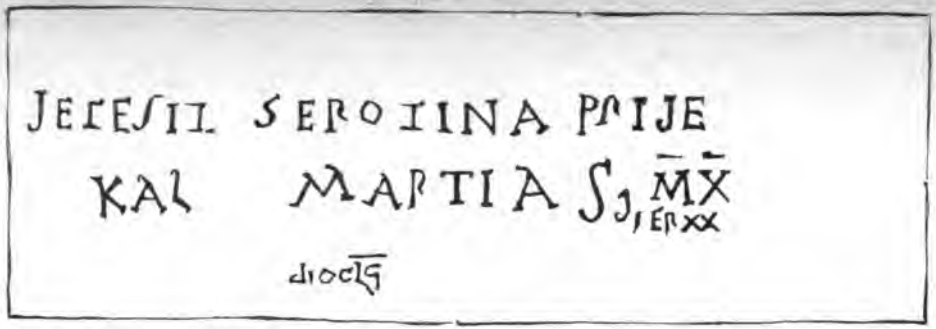

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THE CANADIAN JOURNAL.

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No. LXVII.—DECEMBER, 1868.

CHRISTIAN EPITAPHS OF THE FIRST SIX CENTURIES.

BY THE REV. JOHN McCAUL, LL.D.,

PRESIDENT OF UNIVERSITY COLLEGE, TORONTO, ETC.

V. THOSE IN WHICH THE OCCUPATION OR POSITION IN LIFE OF THE DECEASED IS STATED—(*Continued.*)

(m) To a sacred virgin :— 74.

PRIEIVNPAVSA
BETPRAETIOSA
ANNORVMPVLLA
VIRGOXIITANTVM
ANCILLADEIETXPI
FL · VINCENTIOET
FRAVITOVC · COṄSS

(*In coem. Callisti;* De Rossi, n. 497.)

Prie (pridie) [Kal.] *Junias pausabet* (pausavit) *Prætiosa, annorum pulla* (puella) *virgo XII tantum, ancilla Dei et Christi, Flavio Vincentio et Fravito, Viris Clarissimis, Consulibus.*

"On the day before the Calends of June, Prætiosa went to her rest, a young maiden of only twelve years of age, a hand-maid of God and of Christ, in the Consulship of Flavius Vincentius and Fravitus, most distinguished men," *i. e.* May 31st, 401, A. D.

75.

HIC QVIESCIT GAVDIOSA $\overline{CF}$ ANCILLA DEI QVAE
VIXIT ANNVS XL ET MEN · V · DEP · X · KAL · OCTOB ·
CALLEPIO $\overline{VC}$ CON*f*

(*In S. Pauli;* De Rossi, n. 739.)

Hic quiescit Gaudiosa, Clarissima Femina, ancilla Dei, quæ vixit annus (annos) *XL et menses V. Deposita, X Kalendas Octobres, Callepio, Viro Clarissimo, Consule.*

"Here rests Gaudiosa, a most distinguished woman, a hand-maid of God, who lived forty years and five months. Buried on the tenth day before the Calends of October, in the Consulship of Callepius, a most distinguished man," *i. e.* September 22nd, 447, A. D.

VI. Those in which there is Mention of or Reference to the Place of Burial.

(*a.*) *Locus factus* :— 76.

LOCVSBASILEONIS
SEBIBOFECIT
XENEBENEMEREN
TIINPACE · DPRID
NONASNOVEMB
CONSS·HONORI
AVG·VII·ETTHODO
SIITER·AVGG

(*Ad S. Laurentii in agro Verano;* De Rossi, n. 576.)

Locus Basileonis, se bibo (se vivo, vivus) *fecit. Xene* (*Xenæ*) *benemerenti in pace. Deposita, pridie Nonas Novembres, Consulatu Honorii Augusti VII et Thodosi* (Theodosii) *iterum Augustorum.*

"The place of Basileo. He when alive made it. To Xene well-deserving in peace. Buried on the day before the Nones of November in the Consulship of Honorius Augustus, for the seventh time, and Theodosius for the second time, the two Augusti," *i. e.* November 4th, 407 A. D.

l. 2. *se bibo.* In Pagan epitaphs such forms are found as *se vivo, se vivus, se vivis, me vivus. Fecit.* This word is used in various connexions. In n. 31, I have noticed its use with *cum* in the sense "spend." We find it, also, with *fatum, scil. fatum fecit* = died; and with *titulus, scil. titulum fecit* = "made the inscription" or "caused the inscription to be made;" also with *locus, scil. locum fecit*="made

the place of burial" or "caused the place to be made." F. C. = *faciundum curavit*, so common in Heathen epitaphs, is very rare in Christian. In both cases, I suspect, the place of burial was, sometimes, actually made by the person himself. Thus in Henzen's n. 6394 — *communi labore sibi fecerunt*. l. 3. *Xene*. I have regarded this name as Greek, although I do not recollect having ever met with an example of it. *Xenis* occurs, and also *Xinna*, which Reinesius strangely believed to stand for *Cinna*.

This stone is remarkable as presenting the most ancient example of the representation of the cross in dated epitaphs. This symbol of Christianity, so common in inscriptions from the latter part of the fifth century, does not appear in any one of those of the first four centuries. The monogrammatic cross, as it is called, was used before this, not however as early as 209, as Zannoni inferred from an inscription given by Boldetti, p. 83. There is, certainly, a monogrammatic cross in that epitaph, but the date is 456, as is evident from the words DN AVITI, *i. e. Domini Nostri Aviti scil.* the emperor of that name. Boldetti, who was not aware of the Consulship of *Avitus Augustus*, interpreted the words as referring to *Avitus*, Consul in 209. The same careless investigator, p. 351, introduced a new fashion of cross on the authority of a stone that he found in the Catacomb of St. Agnes. This he not only figured, but described as a decussated cross transfixed with a spear, whilst it is really no more than an imperfect Constantinian monogram. His mistake led to serious waste of time and trouble, for some learned men, as De Rossi remarks, *arcanam significationem inani labore investigarunt*. See Cavedoni, *Bull dell'. Ist.* 1843, p. 152. Aringhi, vol. ii. pp. 377–380, furnishes another example of the result of extravagant symbolism. More than four columns of his work are devoted to the explanation of certain figures, that he calls representations of the heart, in the inscriptions found in the Catacombs, and the subject is illustrated by various quotations from the Holy Scriptures, the Fathers, and Greek and Latin heathen authors. These figures, however, on which so much learning is wasted, are in reality nothing more than leaf-points, or leaf-decorations, that are commonly found in both Christian and Pagan inscriptions. See examples in Plate iii. 2. Nor was this ridiculous mistake limited to Aringhi. Boldoni suggested that the figure—unquestionably a leaf with a stem—signified *dolorem cordi intimum*, and Grasser believed that it was the representation *cordis spina transfixi*, and meant *cordolium!*

The Constantinian monogram is, as might be expected, of frequent occurrence on Christian sepulchral stones, but a great object of search relative to this symbol has been to find an example before the year 312 A. D. It was believed that one was found on a stone discovered by Boldetti, of the date 291 A. D., but De Rossi, n. 17, has, I think, correctly regarded this figure as merely an ornamental point. He himself, however, gives an example (n. 26), which may be, but cannot certainly be proved to be, of the date 298 A.D. The *earliest that I have noticed is of the date 331 A. D.

(*b*) *Locus emptus* :— 77.

COSTATINOS · EMIS
SE IANVARIVM · ET · BRI
TIAM LOCVM ANTE DO
MNA EMER ITA AEOSSO
RIBVS BVRDONE ETMICI
NVM ET MVSCO RVTIONE AVRISOLI
O VM VN SEMES · CONS · D · D · N · N · THAE
ODOSIO · ET · VALENTINIANO · II·

(*In coenobio S. Pauli ;* De Rossi, n. 653.)

Co(n)stat nos emisse, Januarium et Britium, locum ante domna (dominam) *Emerita* (Emeritam), *a eossoribus* (fossoribus) *Burdone et Micinum* (Micino) *et Musco, ratione auri solidum* (solidi) *unum* (unius) *semessem* (semissis), *Consulibus Dominis Nostris Theodosio et Valentiniano iterum.*

"It is unquestionable that we Januarius and Britia bought a place in front of (the sepulchre of) Lady Emerita from the diggers Burdo and Micinus and Muscus for the consideration of one solidus of gold and a half in the Consulship of our Lords Theodosius and Valentinian for the 2nd time," *i. e.* 426 A. D.

The formula *constat nos emisse* is not rare in monuments of this age, whence it appears that the line between *costat* and *nos* is merely a mark of punctuation. The sepulchre of *Saint Emerita* was in the cemetery of Commodilla, behind the basilica of St. Paul.

She and Digna are said to have suffered death at Rome, under Valerian and Gallienus.

---

* I do not take into account the use of crosses and monograms before Christianity, the meaning of which was of course different from the Christian signification. Examples of the gammadion occur on Roman altars found in Britain.

The *solidus* was originally called the *aureus*. It had different values at different periods. From the time of Constantine there were 72 (OB) coined to the pound of gold. The *semissis* and *tremissis* were coins respectively ½ and ⅓ of the *solidus*. Northcote, "Roman Catacombs," p. 28, notices this inscription, and remarks, "A solidus and a half the price paid for a single [?] grave was a sum equivalent to about eighteen shillings [sterling] of our own coin."

(*c*) *Locus *donatus* :— 78.

HIC REQVIESCIT IN PACE AMEN . . . . . .
. . . SQVI FECIT · CVM OXVRE ANN . . . *dep*
in LOCVM QVEM DONAVIT DOMINVS PAPA
HORMISDA POSSEDATVR LOCS EVM NE QVIS
MREMOBAT DEFVNCTVS EST N̄ON NOVEMBRIS
FL· SYMMACO ET VOETIO V̄V̄ C̄C̄.

(*In S. Martini in montibus*; De Rossi, n. 980.)

Hic requiescit in pace Amen ———— *s, qui fecit cum oxure* (uxore) *annos* ——— [Depositus] *in locum* (loco) *quem donavit Dominus Papa Hormisda. Possedatur* (possideatur) *locus; eum ne quis unquam remobat* (removeat). *Defunctus est, Nonas* (Nonis) *Novembris* (Novembres, Novembribus), *Flavio Symmaco* (Symmacho) *et Voetio* (Boetio), *Viris Clarissimis.*

"Here rests in peace Amen ———— s who passed with his wife ——— years. Buried in the place which the Lord Bishop Hormisda gave (to him). Let the place be held in possession; let no one ever remove it (or him). He died on the Nones of November, in the Consulship of Flavius Symmachus and Boetius, most distinguished men," *i. e.* November 5th, 522 A. D.

(*d*) *Locus bisomus* :— 79.

PETRONIVS IN PACE XVII· KALEN*das* . . . . . .
NIS QVI VIXIT ANNVS LXVI · CONSVLAT*v olybrio et*
PROBINO V̄V̄ C̄C̄ · HIC REQVIESCIT IN *Pace . . . quæ*
SEBIBA FECIT BISOMVS VACAT.

Petronius in pace, XVII Calendas ———— *nis qui vixit annus* (annos) *LXVI, Consulatu Olybrio* (Olybrii) *et Probino* (Probini) *Viris Clarissimis* (Virorum Clarissimorum). *Hic requiescit in pace* —— *quæ se biba* (se viva) *fecit. Bisomus vacat.*

---

* For *locus concessus* see Epitaph 67.

"Petronius in peace on the seventeenth day before the Calends of ———, who lived 66 years, in the Consulship of Olybrius and Probinus, most distinguished men, *i. e.* 395 A. D. Here rests in peace ——— who in her life time made this. Space for two bodies is unoccupied."

l. 2. *nis.* The beginning of the word, of which this is the ending, was in the preceding line. *Consulatu Olybrio.* See note on epitaph 58. †*Bisomus vacat.* Was this an intimation that it was for sale? I have not seen Ratti's comment on this inscription, which was published in *Atti della pont. accad. d'arch.*, but De Rossi's notice of it is very unfavorable. He says that his observations show nothing but *incredibilem ejus in re epigraphica inscitiam et summam judicii levitatem.*

(*e*) *Locus trisomus* :— 80.

CALEVIVSBENDIDITAVINTRISOMVVBIPOSITIERANTVIN
[IETCALVILIVSET
LVCIVSINPA COS · STIL

(*E coemeterio SS. Quarti et Quinti;* De Rossi, n. 489.)

Calevius vendidit Avin (Avinio) *trisomu* (trisomum), *ubi positi erant vini* (bini) *et Calvilius et Lucius in pace, Consulatu Stilichonis.*

"Calevius sold to Avinius a place for three bodies, where both Calvilius and Lucius had (already) been placed in peace, in the Consulship of Stilicho," *i. e.* 400 A. D.

The stone that bears this inscription is remarkable on account of the symbols that are cut on it, *viz.*, the monogram, the balance, the fish, the candelabrum with seven lights, the house, and the mummy in a receptacle approached by steps. Of the monogram and the fish I have already spoken. The candelabrum with seven lights, or the seven-branched candlestick, is frequently represented on the grave-stones of Jews, and was adopted from them by Christians, with, perhaps, a different meaning. The balance may have been derived from the notion of Psychostasy, which was Eastern in its origin, and to which the weighing of the Fates of Achilles and Hector in the Iliad is analogous. With it may be compared the expression used relative to Belshazzar in Daniel, v. 27. Or does the symbol merely indicate the just dealing of the deceased?

† I have given this epitaph in illustration of *locus bisomus*, chiefly on account of the words *bisomus vacat;* but the *locus* seems to have been *quadrisomus*, space for two bodies being unoccupied.

The house may have been used as indicative of the last dwelling-place, and the mummy certainly represents Lazarus and is symbolical of the resurrection. De Rossi refers to the discussion of these symbols by Mamachi, *Orig. ch.* iii., Munter, *Sinnbilder*, p. 57, Didron, *Hist. de Dieu*, p. 339, Raoul Rochette, *Mem. de l'Acad. des inscr.* xiii. 244, and by himself in *Spicil. Solesm.* iii. p. 549. Aringhi, ii. p. 357, figures the stone and illustrates the meaning as usual, by citations of all kinds from the authors of the Old and of the New Testament, from Origen, Irenæus, Jerome, Augustine, Chrysostom, and Gregory. And yet in this, as in other collections of quotations in Aringhi's work, the result, so far as definiteness of explanation is concerned, is very unsatisfactory.

(*f*) *Locus quadrisomus* :— 81.

FL·TATIANO ET QVINTO
AVR·SVMMACOVORIS
CI RISSIMIS EGOZITA
LOCVM QVADRIC
SOMV IN BSILIC
ALVA EMI

(*E basilica supra coem. Domitillæ;* De Rossi, n. 395.)

Fl. Tatiano et Quinto Aur. Summaco (Symmacho), *Viris Clarissimis, ego Zita locum quadrisomum in basilica salva emi.*

"In the Consulship of Flavius Tatianus and Quintus Aurelius Symmachus, most distinguished men (*i. e.* 391 A. D.) I, Zita, whilst alive, bought a place for four bodies in the Basilica."

(*g*) *Μνημεῖον* :— 82.

Ἐκτίσθη τὸ μνημεῖον τοῦ μακαρίου Στεφάνου ἀπὸ Ἀπαμείας [?] *ἐν μηνὶ Ἀπελλαίῳ ἰνδικτιῶνος ζ̄ τοῦ ἔτους υδη̄.*

(*Schmurrin in Syria;* Kirchhoff, n. 9146.)

"This monument of the blessed Stephen from Apamea was erected in the month Apellæus, in the 7th Indiction, in the year 438," of the epoch of the *Bostreni* (which counts from 105 A. D.)=December 544, A. D.

I have given only the expansion, as I am unable to present a copy of the original without type cut for the purpose. Other terms applied to the tomb are *μνῆμα, τύπος, θήκη, σωματοθήκη, ἡροεῖον, παραστατικὸν, μνῆμα, χαμοσόριον, τύμβος, κοιμητήριον, οἶκος αἰώνιος.*

(*h*) *In Basilica* :— 83.

Vict OR IN PACE FILIVS EPISCOPI VICXORIS
Civit ATIS VCRESIVM VIXIT ANNIS XXXꝙIII
Mensibus VII DECES D XI KAL · NOVEBR · CONSVLATV
d. n. honor IVI AVG DEPOSITVS IN BASILICA SANCTO
rum NASARI ET NABORIS SECVNDV ARCV IVXTA
f ENESTRA

(*In vico quodam ad S. Mariæ supra Minervam;* De Rossi, n. 534.)

Victor in pace, filius Episcopi Vicxoris (Victoris) *civitatis Ucresium. Vixit annis XXXIX mensibus VII. Decessit die XI Kalendas Novembres, Consulatu Domini Nostri Honorii sextum Augusti. Depositus in Basilica Sanctorum Nasarii et Naboris secundo arcu juxta fenestram.*

"Victor, in peace, son of Bishop Victor of the City of the Ucrenses. He lived 39 years 7 months. He departed on the 11th day before the Calends of November, in the Consulship of our Lord Honorius, for the sixth time, Augustus (*i. e.* October 22nd, 404 A. D.) Buried in the Basilica of Saints Nasarius and Nabor, in the second arch near the window."

The Italics in the text are De Rossi's restorations. I have followed him in substituting ꝙ for C in the 2d line, and in reading I for T, before VI, in the 4th line.

l. 1. *Episcopi Vicxoris* (Victoris). This is the usual order—not *Victoris Episcopi Civitatis Ucresium*: thus also *Papa Hormisda, Papa Ioanne.* See De Rossi, n. 989.

In an inscription, found at Narbonne, (Mai, p. 83, Gruter, 1059, 1) of the year 445 A. D.— *Valentiniano Aug. vi.*—we have—

RVSTICVS · EP̄VS̄ · EP̄I · BONOSI · FILIVS · EP̄I · ARATORIS · [DE · SORORE ·
NEPVS · EP̄I · VENERI · SOC̄I · IN · MONASTERIO COMPRB · [ECCLE · MASSILIEN, &c.

Rusticus episcopus, episcopi Bonosi filius, episcopi Aratoris de sorore nepos, episcopi Venerii socius in Monasterio, compresbyter ecclesiæ Massiliensis.

l. 2. *Ucresium.* De Rossi regards this as used for *Urcensium* or *Urgensium.* There was a town called *Urgi*, in Numidia, and another called *Urci* in procoonsular Africa. Each of these had its own Bishop in the fourth or fifth century.

Nasarius (or Nazarius) and Nabor, soldiers, are said to have been beheaded at Rome, in the persecution of Diocletian and Maximian.

(i) *Sepulcrum* :— 84.

VOSPER CRISTVM
NEMIHIABALIQVOVIO
LENTIAMFIATETNESEPVL
CRVMMEVMVIOLETVR
DEPDIEVIIIDAVGVSTAS
ADELFIO V̄C̄ CONSS

(*In Mus. Lat.*; De Rossi, n. 752.)

[Adjuro] *vos per Cristum* (Christum), *ne mihi ab aliquo violentiam* (violentia), *fiat et ne sepulcrum meum violetur. Depositus, die VII Idus Augustas, Adelfio* (Adelphio), *Viro Clarissimo, Consule.*

"I conjure you by Christ that no violence may be offered to me by any one, and that my sepulchre may not be violated. Buried on the seventh day before the Ides of August, in the Consulship of Adelphius, a most distinguished man," *i. e.* August 7th, 451 A. D.

Such *prayers and injunctions to respect the sanctity of the sepulchre are found in Pagan epitaphs: in both also the stronger form of imprecations is used. In a Heathen epitaph, we have *si quis violaverit ad inferos non recipiatur;* in a Christian, *male pereat, insepultus jaceat, non resurgat, cum Juda partem habeat, si quis sepulcrum hunc violaverit.*

Sometimes the anathema is resorted to, as in the following, found in the island of Salamis, and given by Kirchhoff, n. 9303 :

Οἶκος αἰώνιος Ἀγάθωνος ἀναγνώστου καὶ Εὐφημίας ἐν δυσὶ θήκαις ἰδίᾳ ἑκάστῳ ἡμῶν. Εἴ δέ τις τῶν ἰδίων ἢ ἕτερός τις τολμήσῃ σῶμα καταθέσθαι ἐνταῦθα παρὲξ τῶν δύο ἡμῶν, λόγον δώῃ τῷ θεῷ καὶ ἀνάθεμα ἤτω μαραναθάν. i. e.

"The everlasting dwelling of Agatho, a reader, and Euphemia, in two graves, one for each of us separately. If any one of our relatives or any one else shall presume to bury a body here, besides us two, may he give account to God and let him be anathema maranatha"

---

* In Henzen's n. 6371 there is a similar prayer. I subjoin the inscription, as it is in some respects peculiar:—*Alexander Augg. ser. fecit se bivo Marco filio dulcisimo, caputafricesi, qui deputabatur inter bestitores* (vestitores) *qui vixit annis XVIII mensibu VIII diebu V. Peto a bobis* (vobis) *fratres boni per unum Deum ne quis vii titelo molestet post mortem.* See Orelli, n. 2685.

(*k*) *Sarcophagus* :— 85.

DEP
IVL
ZACO
NIS
DIE IIII
NOVEM
BRES
DATIA
NO ET
CEREA
LE COSS

FL·IVLIVS ZACONVS ET
AVRELIA MERIA CON
IVX EIVS HOC SARCOFA
GVM SIBI VIBI· POSVERVNT
SI QVIS POST NOSTRAM PAV
SATIONEM HOC SARCOFA
GVM APERIRE VOLVERIT IN
FERAT ECCLESIAE SALON·AR
GENTI LIBRAS QVINQVAGINTA

(*Salonis;* Muratori, 381, 2.)

Flavius Julius Zaconus (Diaconus) *et Aurelia Meria conjux ejus hoc* (hunc) *sarcofagum* (sarcophagum) *sibi vibi* (vivi) *posuerunt. Si quis post nostram pausationem hoc* (hunc) *sarcophagum aperire voluerit inferat ecclesiæ Salonitanæ argenti libras quinquaginta.*

Depositus Julius Zaconis (Diaconus) *die IV* [Kalendas] *Novembres, Datiano et Cereale Consulibus.*

"Flavius Julius, a deacon, and Aurelia Meria his wife, whilst living, erected this sarcophagus for themselves. If any one after our decease shall take on himself to open this sarcophagus, let him pay as the penalty fifty pounds of silver to the church at Salonæ."

"Julius, the deacon, was buried on the fourth day before the Calends of November, in the Consulship of Datianus and Cerealis," *i. e.* October 29th, 358 A. D.

l. 1. *Zaconus.* See note on epitaph 65. Muratori observes :—

"*Zaconus* et *Zaconis* est pro *Diaconus* et *Diaconis*, uti *Zabulus* pro *Diabolus*, *Zeta* pro *Diæta*."

I have regarded *Zaconis* as given in mistake for *Zaconus*, and think that the correctness of this view is confirmed by the name "*Julius*."

l. 7. *Inferat*, &c. The naming of a penalty for violation of the grave is of very common occurrence in Pagan epitaphs, both Greek and Latin.

There is scarcely one of the *designations of the place of burial used in Christian epitaphs, so far as I recollect, that is peculiar to them. *Locus*, *tumulus*, *memoria*, *cubiculum*, *sepulchrum*, *sarcophagus*, &c.,

* I have not observed *quadrisomus* in any Pagan epitaph.

are found in Pagan inscriptions, from which, also, †*domus æterna*, although inconsistent with belief in the resurrection, has been inadvertently borrowed. See De Rossi, nn. 159, 173.

VII. THOSE WHICH CONTAIN CYCLIC MARKS OF TIME.

(*a*) Day of the month, day of the week, and day of the moon without the year:—

86.

BALENTINE QVE VIXIT ANNOS XXXVI
DECESSIT · VIKAL · MAR · DIEBENERIS
LNAXVII.

(*In coem. Priscillæ;* De Rossi, n. 597.)

Balentine (Valentinæ), *que* (quæ) *vixit annos XXXVI. Decessit VI Kalendas Martias, die Beneris* (Veneris), *luna XVII.*

"To Valentina, who lived thirty-six years. She departed on the sixth day before the Calends of March, Friday, the seventeenth day of the Moon," *i. e.* February 24th, 411 or 327 A.D.

In this inscription the Consuls are not mentioned; nor is there any other form of expression for the year used; and yet the full date may be inferred from what is therein stated. It is plain that it must be a year in which February 24th and the 17th day of the Moon fell on Friday. Marini's comments are:—"*Hujus inscriptionis characteres, si auctor veterem ecclesiæ cyclum annorum LXXXIV sequutus est, pertinere possunt ad annos* 327, 411, 495, *qui cycli XXX sunt, atque exordiuntur die solis luna XXII; proindeque novilunium Januarii contigit die X, Februarii die VIII, a qua ad VI Kal. Martias, seu ad diem XXIV Februarii dies sunt XVII.*"

De Rossi discusses the subject, and shows that the choice lies between 327 and 411, as in 495 the Victorian canon was in use at Rome, according to which we should have had *luna XV*, not *XVII*. Of the two the first, 327, is preferable, as the characteristics of the inscription, *i. e.* the absence of contractions and the use of the ancient term *decessit*, point to the earlier date.

† This form or *domus æternalis* is unusually common in the epitaphs of *Pomaria* in Algeria. See Renier, n. 456. In different localities, as might be expected, different forms were popular. Thus *pius* often occurs in African, and *carus suis* in Spanish epitaphs.

(*b*) Hour, day of the month, and day of the Moon with year :—87.

PVER NATVSA Ω
DIVOIOVIANO AVG · ET
VARRONIANO COSS
ORANOCTIS · IIII
IN VXIT VIII · IDVS MADIAS
DIE SATVRNIS LVNAVIGESIMA
SIGNO APIORNONOMINFSIMPCCIVS

(*In Mus. Capitolino ;* De Rossi, n. 172.)

Puer natus, (*Alpha Omega*) *Divo Ioviano Augusto et Varroniano Consulibus, ora* (hora) *noctis IV, in vxit VIII Idus Madias* (Maias), *die Saturnis* (Saturni), *Luna vigesima, signo Apiorno* (Capricorno), *nomine Simpccius* (Simplicius).

"A boy born (Alpha Omega) in the Consulship of the deified Jovian Augustus, and Varronianus (*i. e.* 364 A.D.), in the fourth hour of the night, ———— the eighth day before the Ides of May, *i. e.* May 8th, on Saturday, the twentieth day of the Moon, in the sign of Capricorn, by name Simplicius."

l. 1. *Puer natus.* This is no uncommon beginning. See n. 88, and notes on it. l. 2. *Divo Joviano.* This Emperor died on the *XIV Kal. Martias*, in the year 364 A.D., and after that date was styled, as was usual, *Divus.* Christians used the ordinary term, in the sense "deceased" or "late," without regard to the sense assigned by Pagans.

l. 5. *In vxit.* It is difficult to determine what was the word intended by the unskilful workman who cut the inscription. Maffei, *Mus. Ver.* p. 252, makes two attempts at it :—"*fortasse* inluxit *intelligendum, hoc est lucidus moriendo evasit ; fortasse* inussit, *pro inustus est fidei nota, seu baptismate.*" Le Blant, *Inscr. Chrét. de la Gaule t. i. p.* 479, reads "induxit," *i. e. induxit albas* = was baptized. See n. 88, and notes on it. Guasco, iii. p. 141, n. 1235, suggests "inluxit," in the sense (according to De Rossi)—*Simplicium natum hora noctis quarta simul ac* inluxerat *dies VIII Idus Maii.* De Rossi objects to this—that the hours were astrologically counted not from midnight but from sunset, and, after stating Maffei's and Le Blant's views, remarks that the words are *novæ prorsus et Christianis titulis inauditæ.* He himself suggests, "In vixit" in the sense—*vixit in VIII Idus Maias, i. e.* Simplicius was born in the fourth hour of the night and lived only for the one day—May 8th. There are, I think, but few scholars that would accept the views of Maffei or Le Blant. Guasco's is recom-

mended by similar phraseology in Muratori's n. 2, p. 431—"*Obiit bonæ memoriæ Cæsaria* medium noctis die Dominica inlucescente *VI Id. Decembris.*" Thus also Suetonius, *Cæsar*, c. 81—*Ea* nocte, *cui* illuxit *dies cædis*, &c. In Kirchoff's n. 9119 we have the corresponding Greek phrase — *ἐπιφωσκ[ούσης τῆς] ὀγδόης τοῦ Ἀ [θυρ] μηνός.* But I am not satisfied. The objection to De Rossi's reading is—that he does not supply the letter in the place left vacant by the stone cutter *scil.* between N and V. Can it be that the vacant space was intended for the monogram, with the letters AΩ incorporated with it, as they often were, and that this having been omitted either from the ignorance or inadvertence of the workman, AΩ were cut in the corner, but yet should be read between *In* and *vixit—scil.* "in AΩ vixit" *i. e. in Deo* or *Christo vixit*, in the sense "lived in God," "died?" See n. 65, &c.

l. 6. *Die Saturni luna vigesima signo Capricorno.* This inscription has been discussed chronologically and astronomically by Blanchini, Lupi and Marini, but De Rossi is the first who has shown that the notices in it are really astrological, and that they should be regarded as forming a horoscope of birth. Thus, p. LXXXIV, he proves that each of these characteristics — *scil.* the fourth hour of Saturday, the Moon in Capricorn, and the twentieth day of the May moon — was regarded as unlucky. See also his comment.

(*c*) Day of the month, octave of Easter, and year :— 88.

NATV · SEVERINOMINEPASCASIVS
DIESPASCALESPRIDNOVAAPRILN.
DIEIOBISFL·CONSTANTINO
ETRVFOV̄V̄CCCONSSQVIVIXIT
ANNORVMVI · PERCEPIT
XIKALMAIASETALBASSVAS
OCTABASPASCAEADSEPVLCRVM
DEPOSVITD · IIIIKALMAIFLBASILIO
V̄CCO*ns*

(*Urbini in ædibus publicis ;* De Rossi, n. 810.)

Natu (*s*) *Severi nomine Pasc*(*h*)*asius dies Pasc*(*h*)*ales pridie Nonas Apriles, in die Jovis, Flavio Constantino et Rufo, Viris Clarissimis, Consulibus, qui vixit annorum* (annos) *VI. Percepit XI Calendas Maias et albas suas Octavas* (Octavis) *Paschæ ad sepulcrum deposuit, IV Kalendas Maias, Flavio Basilio, Viro Clarissimo, Consule.*

"Severus, who had also the name Paschasius, was born on one of the Paschal days, the day before the Nones of April (*i. e.* April 4th), on the day of Jupiter, (Thursday), in the Consulship of Flavius Constantinus and Rufus, most distinguished men (*i. e.* 457 A. D.), who lived six years. He received baptism on the eleventh day before the Calends of May (*i. e.* April 21st), and laid aside his albs at the sepulchre, on the Octave of Easter, on the fourth day before the Calends of May, in the Consulship of Flavius Basilius, a most distinguished man," *i. e.* 463 A. D.

l. 1. *nomine.* Whether we regard *Severi* as used for *Severus*, or governed by some word understood, it seems certain that *nomine* should be joined to the name following, as in De Rossi's nn. 41, 49, 172, 229, &c. De Rossi remarks: "*Ille, cujus hoc est epitaphium, paterno sive materno cognomine Severus appellatus Paschasii quoque agnomen habuit, quod natus erat anno* 457 *die Jovis paschali.*" l. 2. *dies Paschales.* Used for *die Paschali.* These *dies Paschales*, as we know from a law of the Emperor Valentinian, *Cod. Theodos.* ii. 8, 2, were in number 15, 7 before and 7 after Easter-day. *pridie Nonas Aprileas die Jovis, i. e.* on Thursday, April the 4th, in Easter week, for in the year 457 A. D. (*scil.* the year in which Constantine and Rufus were Consuls), according to both Roman and Alexandrian calculation, Easter-day was observed on March the 31st. l. 5. *percepit, i. e. baptisma percepit*, "received baptism." **Percipio* is similarly used in heathen inscriptions, where it is applied to those who had participated in the mystic rites of the *Mater Deum Magna Idæa* or of *Mithras*, known as the † *Taurobolium* and *Criobolium.* Thus we have —*percepto Taurobolio Criobolioque*, in an inscription, given by De Rossi n. 24, of the date

* In some instances, where this verb is used, it is difficult to decide whether the inscription is Christian or Pagan. Thus in Henzen's n. 6147:—*D. M. Murtius Verinus pater Murtie Verine et Murtie Florianeni filiabus malemerentibus crudelis pater titulum iscripsit. Verina* percepit M. X, *vicxit annos XII, menses V, Florianes* percepit M. XII. *vicxit annis VIII, M. III. Innocentes acceperunt a suo patre quod ei debuerant;* and in Mommsen's I. N. n. 3160:—*D. M. Ingeniosæ que vixit annis III, M. V, Dies XXI. Fide* percepit *mesorum VII. Aur. Fortunius pater filiæ.* Henzen regards *fide* as used for *fidem;* I am inclined to take it as an adverb.

† The *Taurobolium* and *Criobolium* were respectively sacrifices of a bull and a ram, on the occasion of initiations. The persons who received them (*qui perceperunt*) descended into a deep pit, which was covered over with a wooden platform composed of pierced planks. On this platform the animal was killed, and the persons beneath presented their bodies to receive the blood, as it descended through the holes. The result was believed to be purification that lasted for twenty years, or everlasting regeneration.

319 A. D.; in Orelli's n. 2130, of the date 390 A. D.; in his n. 2335 of the date 376 A.D.; in Henzen's n. 6040, of the date 370 A.D.; in Muratori's n. 4, p. 389, of the date 383 A. D.; and also in Reinesius, *Cl.* 1, 40 (without date), whose note is worth reading. In Muratori's n. 2, p. 371, of the date 305 A. D., we have the words *Taurobolium* percepi *felic(iter)*.

The oldest example of the *taurobolium*, of which I am aware, was in 175 A.D. See Fleetwood, p. 11; Fabretti, p. 665; and Reinesius, as above.

Another term, in which there is a strange agreement, is *renatus*, applied by Christians to the baptized—as in De Rossi's n. 270, (*ca*) *elesti renatus* (*aq*)*ua qui vivit in* (*aevum*) (see also n. 36—*natus est in æternum*)—and by Pagans to the *Tauroboliati*. Thus *Taurobolio Criobolioque in aeternum renatus*, in Orelli's n. 2352, of the date 376 A.D.; and *arcanis perfusionibus in æternum renatus Taurobolium Criobolium*que *fecit* in Henzen's n. 6040. These mystic rites seem to have been a mixture of the cults of the *Magna Mater* and *Mithras*, with the addition of some Christian principles and terms.

l. 6. *XI Calendas Maias*. From the words *Octavas Paschæ*, and *Basilio Consule*, it is evident that this day — *scil.* April 21st — was Easter-day in the year 463 A. D., and that Severus was baptized, according to custom, on its vigil, the day being counted, as usual, from Saturday to Sunday evening. But here a great difficulty presents itself. According to the tables of Noris, Easter-day should in this year, conformably to Roman calculation, have been celebrated on *IX Calendas Apriles*, *i. e.* March 24th. The learned Cardinal discusses the subject *ad fastos consulares anonymi* and *de pasch. Lat. cyclo*, where he suggests two solutions, both of which have been proved to be erroneous, one by Van der Hagen, and the other by De Rossi. The latter shows that by the old Roman calculation of the cycle of 84 years, before it was amended by Proeper, and also by the Victorian correction, Easter-day was observed in the year 463 A.D., on the *XI Calendas Maias*, *i. e.* April 21st, not on the *IX Calendas Apriles*, or March 24th.

ll. 6, 7. *albas suas Octabas Pascæ ad sepulcrum deposuit*. White dresses (*albæ*) were worn by those receiving baptism. On the Sunday next after Easter Sunday, *i. e.* the Octave of Easter-day, these dresses were laid aside, whence this Sunday was called *Dominica in Albis*. *Paschasius* was buried on the day on which, according to usage, he should have laid aside his *albs* or white clothes.

VIII. MISCELLANEOUS.

(*a*) The most ancient dated epitaph :— 89.

(See Plate IV, 3.)

(*In Mus. Lateran.*; De Rossi, n. 1.).

[*A*]*ug*(*ustas*) *Vespasiano III Consule.—Jan*(*uarias.*)

"——— before the Calends (?) of August, in the third Consulship of Vespasian" (*i. e.* 71 A.D.) "——— before the Calends of January."

This fragment has been received as a part of a Christian epitaph by Reggi, Marini, and De Rossi. It is the most ancient of all such that bear dates. The chief grounds on which it has been regarded as Christian are that the slab is of the same kind as those used to close the tombs in the Catacombs, and that it had adhering to it the mortar by which such slabs were fixed in their places. To these grounds De Rossi has made an important addition, by his reading IAN as *Januarias*, thus showing that the stone closed a *locus bisomus*, containing the bodies of one who had died—before the Calends [?] of August, and of another who had died—before the Calends of January.

In the year 71 Vespasian was Consul for the third time, with Cocceius Nerva as his colleague. On the 1st of March or April he resigned the office, and, on the 1st of July, L. Flavius Fimbria and Attilius Barbarus were made *consules suffecti*. The year then is marked here, as in other Christian epitaphs, not by the names of the *suffecti*, but by that of one of the *ordinarii*.

(*b*) Unexplained numerals :— 90.

N·XXX· SVRA ET SENEC · COSS·

(*E coemet. Lucinæ*; De Rossi, n. 2.)

N·XXX· Sura et Senecione Consulibus.

"In the Consulship of Sura and Senecio," *i. e.* 107 A. D.

The numeral III is omitted after SVRA and II after SENEC. See De Rossi's note.

I have not attempted to translate "N·XXX·," as their meaning is unknown. The interpretation that has been generally received is that they stand for *numero XXX*, indicating that martyrs were buried there in number thirty. This view has been taken by Visconti, Cavedoni, Raoul Rochette, and Wiseman. Roestel also assents, but regards the inscription as commemorative of a past age. De Rossi

objects, in my judgment with good reason, to this *interpretation. He calls in question the genuineness or analogy of the other inscriptions usually compared with this as confirming the sense assigned to it, and points out the improbability that the stone marked a *loculus* in the Catacombs, as the greatest number of bodies contained in such is 4. He suggests that the inscription may be imperfect, and that thus N may be regarded as the last letter of ANN. *i.e. annorum, scil. annorum XXX*, the person, whose name preceded, being of thirty years of age. It is remarkable that in this De Rossi was anticipated by Maitland, who (p. 58) "reads the words as the fragment of *qui vixit ann. XXX Syrra et Senec. coss*, who lived thirty years. In the Consulate of Syrra and Senecio; that is, A.D. 102." I cannot concur in this explanation. It suits this particular case, but is wholly inapplicable in others *e. gr.* in Fabretti, p. 574, 61, we have the epitaph of *Leopardus*, a boy whose age is stated to have been 7 years and 7 months. At the commencement of it are the letters—DMASACRVM XI, *i.e. Dis Manibus Sacrum.* 40. Again, in the Catacomb of St. Agnes, De Rossi found LIX on the *loculus* of an infant. Nor can Amati's positive assertion that they indicate *loculorum ordines* be received, for this is contrary to the experience of those who have personally examined the Catacombs. To me it seems evident that there is no sufficient reason for believing either that these numerals indicate the number of bodies buried within, or that the deceased were Martyrs. I can offer no satisfactory solution: it has seemed to me, however, not improbable that the numbers were the marks of workmen —the *fossores* or their assistants—who may have been paid according to the number of *loculi* excavated or of slabs put up. I have observed a similar notation in a Pagan epitaph, given by Orelli, n. 5008:— *N. III. Id. Nov. Diis Manibus Didiæ Q. F. Quintinæ Luetina Priscus uxori optimæ V. A. XXVII.* Labus remarks:—"*Numero tertio, Idibus Novembribus:* cioè la pietra, il cippo, il monumento ecc. era posto nel terren sacro al No. 3."

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* This view might seem to be as old as the time of Prudentius (*scil.* the 4th century), for he writes:—

Sunt et multa tamen tacitas claudentia turbas,
Marmora quæ solum significant numerum.

But the reference here seems to be to *Polyandria*—pits containing many dead bodies—not to *loculi*, of which, so far as I am aware, there is no example of their containing more than four.

(*c*) Specimen of Palæography:— 91.

(See Plate III, 1.)

(*E coemet. Cyriacæ;* De Rossi, n. 21.)

Decesit (decessit) *Serotina pride* (pridie) *Kal. Martias m(ensium) X, dier(um) XX, Diocl(etiano)* ϛ (VI) consule.

"Serotina departed on the day before the Calends of March, (aged) ten months, twenty days, in the sixth Consulship of Diocletian," *i. e.* February 29th, 296 A. D.

(*d*) Use of D. M. by Christians:— 92.

D· M·
P·LIBERIO VIXIT ANN N̄·V·MENS
N̄ III DIES N̄ VIII RANICIO
FAVSTO ET VIRIO GAL·

(*E coem. ?;* De Rossi, n. 24.)

Diis Manibus. Publio Liberio, vixit annos numero V, menses numero III, dies numero VIII. Recessit Anicio Fausto et Virio Gallo (Consulibus).

"To the Gods the Manes. To Publius Liberius. He lived years in number five, months in number three, days in number eight. He retired (from this world) in the Consulship of Faustus and Virius Gallus, *i. e.* 298 A.D."

We have here an example of the use of the heathen formula D. M., *Diis Manibus*, in an epitaph that De Rossi and other scholars regard as Christian. I have noticed this anomaly in Part XI of my "Notes on Latin Inscriptions found in Britain" (*Canadian Journal*, X. p. 95), and ascribed it either to thoughtless use of the form, produced by familiarity with it as the ordinary commencement of a sepulchral inscription, or to the fact, that grave-stones were kept for sale with these letters cut on them, and were purchased by Christians without consideration of their appropriateness. Fabretti insists that these letters when they occur in a Christian epitaph, stand for *Deo Magno*, or *Deo Maximo;* but there is no doubt that his opinion is erroneous, for the form is found, in at least one such inscription, *in extenso*, *i. e. Diis Manibus*. See Orelli, n. 4458=4723, and compare Maitland, "Church in the Catacombs," pp. 59, 60, 61, who regards this inscription to *Liberius* as 'almost certainly Pagan.' The same view of it is taken by Roestel. I incline, however, to the belief that it is Christian. My reasons are that it was found in one of the Catacombs, that the stone was not broken, and that we find in the inscription the letter R used

for *recessit, requiescit,* or *reddidit.* See Epitaph, n. 1. Maitland's version of this inscription is liable to just censure. In his text, he gives R before ANICIO, but takes no notice of it either in his translation or in his remarks. Again, the date is given by him as A. D. 98; and although one would be disposed to explain this error by supposing that 2 was accidentally omitted before 98, by a typographical mistake, it is impossible to accept this solution, for, in pp. 58, 59, he notices this inscription as of earlier date than two others, one of A.D. 102, and the other of A. D. 111. In Westropp's "Handbook of Archæology," p. 400, we have the same inscription, with the same neglect of R in translation, and with the date A. D. 102. The same author assigns A.D. 130 for the inscription relative to Marius, and A. D. 160 for that relative to Alexander, without sufficient ground for assigning either year.

The most remarkable of the Christian epitaphs, that have the heathen formula in the commencement, is a well known one to *Leopardus*, discussed by Fabretti, p. 574, and by Raoul Rochette, in a "Memoire sur les antiquités chrétiennes des catacombes," in *Mem. de l'Académ. des inscript. et belles lettres,* XIII.

The inscription, as given by Fabretti, stands thus:

DMA SACRVM XL
LEOPARDVM IN PACEM
CVM SPIRITA SANTA · ACCEP
TVM EVMTE ABEATIS INNOCINEM
POSVER · PAR · Q · AN · N · VII · MEN · VII ·

In Raoul Rochette's *copy, we have *evinte* for *eumte* in the fourth line, and G for Q in the fifth. Mabillon discovered in this inscription a manifest reference to the rite of *confirmation.* Fabretti gravely corrects this interpretation, as he found in it a manifest reference to the rite of *baptism!* Raoul Rochette judiciously maintained that †neither was right. He remarks—"Il n' est question, dans ces expres-

* As given in *Dictionnaire d' Épigraphie Chrétienne,* ii. p. 758.

† Lupi held the same opinion, *viz.,* that there was no reference to either baptism or confirmation. He explains the 2d, 3d, and 4th lines thus: *Leopardum in pacem* (pace) *cum Spirita Sancta* (Spiritus Sanctos, Spiritibus Sanctis) *acceptum eumte* (eumdem) *abeatis innocinem* (habeatis innocentem). Corsini, *Not. Græc. Diss.* ii. p. xxxvi, rejects this view, and proposes the following as preferable:—*Leopardum in pace cum Spiritu Sancto* (the Holy Spirit). *Acceptum eundem a Beatis* (the Blessed) *innocentem posuerunt Parentes.*

sions d' une latinitè barbare, d' aucun de ces sacrements de l' Eglise; ou reconnait une foule d' exemples de ces mots; *cum spirito*, *ispirito*, *hispirito sancto*, *cum spirita sancta*, altéiés d' une manière plus ou moins vicieuse, et qui ne peuvent s'entendre que de l'*ame* même du chrétien, admise après la mort dans le séjour des bienheureux, en vertu de la synonymie connu des mots *anima* et *spiritus*, dans le vocabulaire de la basse latinité." He closes his observations on the inscription by proposing the following expansion:

"*Divis martyribus sacrum quadraginta*
Leopardum in pace
cum Spiritu sancto accep
tum eumdem habeatis. **Innocentem*
posuerunt parentes. qui [vixit] *annis VII, mensibus VII.*"

It is very difficult to infer from the two copies that I have before me—viz., Fabretti's and Raoul Rochette's—the true reading of the inscription; but I entertain no doubt that both Mabillon's and Fabretti's interpretations should be rejected, and that Raoul Rochette's view as to *cum spirita santa* is correct. At the same time, his expansion—*Divis Martyribus sacrum quadraginta*—is clearly inadmissible. There is no authority in any epitaph for this rendering. Nor is there any reasonable doubt that the letters DMA stand for *Diis Manibus*, as Mabillon understood them; whilst the signification of XL, as I have observed in my note on Epitaph, n. 90, remains to be discovered. The rest of his expansion is probable, except the omission of *numero* after *annis*, which should be introduced, if Fabretti's punctuation be correct. But another, and a very remarkable, peculiarity of the inscription, hitherto unnoticed, remains to be considered—*i. e.* the use of the expression *acceptum habeatis* with the dedication *Dis Manibus* in a Christian epitaph. If we compare this with the words—*Manes sanctissimæ* [*sic*] commendatum habeatis *meum conjugem* in Orelli's n. 4775, a Pagan epitaph, and *Sanctique tui Manes nobis petentibus adsint* in Gruter's, 1061, 7, a Christian epitaph, there can, I think, be but little doubt that some Christians of the early ages retained

* I have given this whole expansion, as it appears in *Dictionnaire d'Épigraphie Chrétienne*, for I am unable to refer to the original article in the *Mem. de l'Académie*. I have but little doubt, however, that neither the presence nor the absence of the points is as Raoul Rochette intended: the authority of the *Dictionnaire* is not worth considering.

some of the Pagan superstitions. See Mabillon, p. 75, and Morcelli, *Stil.* ii. 71, 72. To me it is plain, that whatever difference of opinion may arise as to the exact reading of this inscription to Leopardus, there can be no question that in it his parents asked the *Di Manes*, the Pagan deities of the unseen world after death, to receive with favor their innocent son. Nor can there be any doubt that the inscription is Christian, for this is proved by the use of the terms—*in pacem, cum spirita santa.* On the latter see Epitaph, n. 42; and on the use of Christian terms in Pagan inscriptions, see notes on Epitaphs 49, 88.

(*e*) Specimen of Palæography:— 93.

(See Plate IV, 1.)

(*In Mus. Capitolin.;* De Rossi, n. 50.

Anime (Animæ) *innocenti Gaudentiæ, que* (quæ) *vixit annos V, menses VII, dies XXII, in pace. Mercurius pater filiae d* (epositæ) *c idus Novemb. Urso et Polemio coss.*

"To an innocent spirit Gaudentia, who lived five years, seven months, twenty-two days, in peace. Her father Mercurius for his daughter buried on the sixth day before the Ides of November, in the Consulship of Ursus and Polemius," *i. e.* November 8th, 338 A. D.

(*f*) Use of *puer* as applied to persons of mature age:— 94.

VRSO ET POLEMIO CONSS NATVS PVER
NOMINE MERCVRIVS D IIII KAL APRILI
DEPOSITVS VII · KAL · SEPT · QVI VIXIT
ANN · XXIIII · M · VII · DXV · BENEM · INP

(*Pisauri; e coem. Urbis;* De Rossi, n. 49.)

Urso et Polemio Consulibus, natus puer, nomine Mercurius, die IV Kalendas Apriles, depositus VII Kalendas Septembres, qui vixit annos XXIV, menses VII, dies XV, benemerenti in pace.

"In the Consulship of Ursus and Polemius (*i. e.* 338 A.D.) a boy was born by name Mercurius, on the fourth day before the Calends of April (*i. e.* March 29th). Buried on the seventh day before the Calends of September (*i. e.* August 26th), who lived twenty-four years, seven months, fifteen days; to him well deserving in peace."

On first sight of this inscription, it seems strange that a person of twenty-four years of age should be called *puer*, and that he should be said to have been born and buried in the same year. The explanation is that *natus* is used with reference to birth by baptism, estimated by

which *Mercurius* was but *puer* at the time of his death. See De Rossi's nn. 178, and 193.

(*g*) Mention of time of sickness before death :— 95.

PERPETVO BENEMERENTI IN PACE
QVI VIXIT · ANNOS · PLM · XXX ME*nses* ...
DEPOSITVS IDVS APRILIS DEFVN*ctus ne*
OFITVS PERIT · IN DIES · V ·
POS CONSVLATV · VICTORI*s et*
VALENTINIANI · NOBI *lissmi pueri*

(*In Mus. Vat.*; De Rossi, n. 214.)

Perpetuo bene merenti in pace, qui vixit annos plus minus XXX, menses ——. *Depositus Idus Aprilis* (Idibus Aprilibus), *defunctus neofitus* (neophytus), *perit in dies V, post Consulatu* (Consulatum) *Victoris et Valentiniani, Nobilissimi Pueri.*

"To Perpetuus, well deserving, in peace, who lived thirty years more or less —— months. Buried on the Ides of April (April 13th), died a neophyte, was sick for five days, in the year after the Consulship of Victor, and Valentinian, the most noble boy," *i. e.* 370 A. D.

l. 4. *Perit in dies V.* This notice of the period of sickness is very rare. We have another example in De Rossi's n. 8 :—ἐνόσησεν ἡμέρας $\overline{\iota\beta}$. l. 5. *Post consulatum Victoris et Valentiniani.* It is strange that this form should be used to denote the year, instead of the ordinary form—*Valentiniano III et Valente III*—especially as we have examples of the use of this latter in Christian epitaphs of January and March. No satisfactory reason can be assigned for this variation, which is also used in other cases apparently capriciously.

(*h*) *Domini Nostri* applied to Consuls not *Augusti* :— 96.

DD NN · CLAEARCO ET RICOMEDE VVCC
CONSVLIBVS BENEMERENTI OLIBIONI QVI VIXIT
ANNVS XV· MESIS VI DIES XX DECESSII
DIE XII KALENDAS OCTOBRES IN PACE

Dominis Nostris Claearco (Clearcho) *et Ricomede* (Ricomere), *Viris Clarissimis, Consulibus. Benemerenti Olibioni, qui vixit annus* (annos) *XV, mesis* (menses) *VI, dies XX. Decessii* (decessit) *die XII Kalendas Octobres in pace.*

"In the Consulship of our Lords Clearchus and Ricomer, most distinguished men (*i. e.* 384 A.D.) To the well-deserving Olibio, who lived fifteen years, six

months, twenty days. He departed on the twelfth day before the Calends of October, in peace," *i. e.* September 20th.

l. 1. DDNN. The phrase *Domini Nostri* is commonly applied to the Emperors; here it is used regarding private persons, who were Consuls. There are, also, other examples of this of earlier date. Hence Corsini, Zaccaria, and Cancelleri inferred that from the close of the 4th century, Consuls were usually styled *Domini*. Muratori, Hagenbuch, and De Rossi, more correctly, ascribe this use to inadvertency and mistake on the part of the stone-cutters.

(*i*) *Opisthographa*:— 97.

(1) HIC · POSITVS · EST
VICTORIANVS QVI VIXIT
ANN · PLVS MINVS L DIPOSI
TOS · IN PACE · DIEM IIII · KAL
IVN · DDNN · TL CAESARIO
ET NONIO · ATTICO · VVCC

(2) D M
Q. VERGILIVS. FELIX
QVI VIXIT. ANNIS. III
MES. VI. DIEB. XVII.

(*E coem. S. Hippolyti*; D. Rossi, n. 445.)

(1) *Hic positus est Victorianus, qui vixit annos plus minus L· Dipositos* (depositus) *in pace diem* (die) *IV Kalendas Junias, Dominis Nostris Tl.* (Flavio) *Cæsario et Nonio Attico, Viris Clarissimis.*

(2) *Diis Manibus. Quintus Vergilius Felix, qui vixit annis* (annos) *III, mes* (menses) *VI, diebus* (dies) *XVII.*

(1) Here has been placed Victorianus, who lived fifty years, more or less· Buried in peace on the fourth day before the Calends of June, in the Consulship of our Lords, Flavius Cæsarius et Nonius Atticus, most distinguished men," *i. e.* May 24th, 397 A. D.

(2) "To the Gods the Manes. Quintus Vergilius Felix, who lived three years six months [and] seventeen days."

I have given this as an example of the *tabulæ opisthographæ*, that are sometimes found in the Catacombs, *scil.* tablets on which a Pagan inscription had been cut, but which were subsequently used for a Christian epitaph.

Nonius Atticus had *Maximus* as his *agnomen*. It has been inferred from a lamp bearing the monogram, and his name—*Noni Attici* $\overline{VC}$ *et*

Inlustris, that he was a Christian. This inference has been confirmed by a proof of the Christianity of the Nonian family at this period, given by Minervini, in *Bull. Nap.* Ser. 2 t. 1 p. 15, to which De Rossi, p. 198 refers, but which I have not seen.

(*k*) Specimen of Palæography:— 98.

(See Plate IV, 4.)

(*E coemet. S. Zotici*; De Rossi, n. 530.)

Lepusclus (Lepusculus) *Leo, qui vixit anum* (annum) *et mensis* (menses) *undeci* (undecim) *et dies dece* (decem) *et nove* (novem) *perit septimu* (septimo) *calendas Agustas* (Augustas) *Onorio* (Honorio) *sexis* (sexies) *Agusto* (Augusto).

"Lepusculus Leo, who lived a year and eleven months and nineteen days. He died on the seventh day before the Calends of August, (in the Consulship of) Honorius for the sixth time," *i. e.* July 26th, 404 A. D.

Lepusculus, as *Muscula*, was, probably, a pet name. Compare the modern *Leporello*. I have translated *perit* as standing for *periit*, but it may be used as τελευτᾷ in Epitaph 23.

(*l*) Posture in prayer:— 99.

(See Plate IV, 2.)

(*E coemet. Commodillæ*; De Rossi, n. 251.)

Petroni'æ dignæ coiugi (conjugi) *que* (quæ) *vixit annis* (annos) *XXI, et fecit cum conpare* (compare) *suo menses X, dies V.* [Deposita] *Kalendis Novembribus pos* (post) *Consulatum Gratiani ter et Equitii, Ursus maritus sibi et innocenti compari fecit. Cesquet* (quiescit) *in pace.*

"To Petronia, a worthy wife, who lived twenty-one years, and passed with her mate ten months, five days. [Buried] on the Calends of November, in the year after the Consulship of Gratianus, for the third time, and Equitius (*i. e.* November 1st, 375 A. D.) Ursus, her husband, made (this) for himself and his blameless mate. She rests in peace."

I have selected this epitaph chiefly because the stone presents an illustration of the attitude of a person praying. This position was at one time so general, that those, who were suffering penance, were not permitted to stand up in the church during prayer.

The outstretched arms and uplifted hands were common to both Jews and Pagans. At one time this figure in the attitude of prayer was regarded as an emblem of martyrdom; and the crown and the

PLATE IV.

Epitaph. N° 89

W.C. Clowes & Co. Lith. Toronto

palm-branch, also, were interpreted as having similar significance, but these theories have not stood investigation. The figure in prayer is certainly a proof of Christianity, but the crown and the palm-branch are found on Pagan tomb-stones. See Muratori *Nov. Thesaur.*, 1828, 5, *Antiq. Ital. diss.* LVIII; Raoul Rochette, *Mem. sur les Antiq. Chrét.* p. ii. § 2; Cardinal Mai, *Vet. Script. Nov. Collect.* V, p. 3, n. 1; and De Rossi, n. 30.

No symbol has so far been suggested as a criterion of martyrdom, that has been universally accepted by scholars. And yet there are at present few, if any, who would give their assent to Dodwell's opinions *de paucitate Martyrum*, or to Burnet's views, in his "Letters from Switzerland, &c.," regarding the identity of the catacombs and *puticuli*.

Birds form one of the favorite decorations of Christian tombstones. The most common of these is the dove, represented singly or in pairs, with or without a branch in the mouth, sometimes perched on a tree, sometimes pecking at a bunch of grapes, and sometimes standing on a vase. Singly it has been regarded as the emblem of peace or of simplicity—in pairs it may have been, in some cases, the symbol of affection. It is Jewish in its origin, and was, doubtless, derived from the history of Noah. Two other birds are occasionally represented, the peacock and the phœnix. They are both Pagan in their origin, but were used by Christians as symbolical of the resurrection.

(*m*) Interval between death and burial:— 100.

DN·MAGNO MAXIMO AVG·II CONSS
III IDVS MAIAS FATVM FECIT LEO ET
DEPOSITVS PRIDIE IDVS MAIAS BENE
MERENTI IN PACE

(*E coem. Cyriacæ;* De Rossi, n. 374.)

Domino Nostro Magno Maximo Augusto iterum Consule, III Idus Maias fatum fecit Leo et depositus pridie Idus Maias. Bene merenti in pace.

"In the second Consulship of our Lord Magnus Maximus Augustus (*i. e.* 388 A. D.), on the third day before the Ides of May (*i. e.* May 13th), Leo died, and was buried on the day before the Ides of May (*i. e.* May 14th). To him well deserving in peace."

l. 2. *Fatum fecit.* This rare expression for *defunctus est* is found in some other Christian epitaphs. See Corsini, *Not. Græc. Diss. ii*, p. XXIV.

l. 3. *Depositus pridie Idus Maias.* Here the deceased was buried on the day after his death. Thus we find in Gruter, 1054, 8—*quæ recessit die Mercurii hora VIII et deposita die Iovis Iduum Maiarum, i. e.* she died on Wednesday and was buried on Thursday. See other examples in Corsini, *Diss.* i, p. 12. In Muratori's, 1959, 9, we have an example of an interval of two days—*Defunctus die XVI Kal. April. depositus XIIII Kal, i. e.* he died on March 17th, and was buried on March 19th.

MOLLUSCOUS ANIMALS.

No. 3.

BY REV. PROFESSOR HINCKS, F.L.S.

The class Gasteropoda next claims our attention. It is considerably the largest in the Molluscous sub-kingdom; is the best representative of its characteristic structure, and occupies the same position among the Molluscous classes which the whole branch occupies among the greater divisions of the animal kingdom, being therefore the typical class in which the greatest number and variety of forms might reasonably be expected. Many attempts have been made at the proper sub-division of this vast assemblage of animal forms. The history of these is not required in connection with my present plan. So far as I can judge the best orders proposed are those of Cuvier with some combinations and modifications more recently suggested. These then I shall assume as a basis and after explaining their distinctions and discussing their mutual relations, I shall enumerate the families belonging to each order, combining or further sub-dividing as may seem to be required. But I must begin by a few observations on the kind of characters employed and their comparative value.

Cuvier's orders are founded on the position and structure of the organs for aeration. The 1st he calls Pulmonifera, having lungs instead of branchiae, by which he means to express breathing air directly, not through the medium of water. Since, however, these organs are not homologous with the lungs of higher animals, but are strictly so with the branchiae of other mollusks, it is better to adopt DeBlainville's name *Pulmobranchiata.* The order is generally admitted to be a natural one. 2. Nudibranchiata: I shall as we proceed venture an opinion on the proper series of these orders. It may be supposed that Cuvier

was influenced by the resemblance of the nudibranchiates to the naked air breathers known as slugs; but though these sea-slugs form a very distinct and natural group, which I cannot help thinking require to be kept separate as an order, the great difference both in their aerative apparatus and their habits of life should prevent these two orders being brought near to one another, and it seems probable that they will ultimately take their places in very different parts of the system. The 3rd order Inferobranchiata, distinguished from the preceding by the branchiae being arranged in two rows under the projecting border of the mantle instead of on the back, bears a close resemblance to it in the form of the animals, but conforms essentially to the character of the next order, of which more recent Malacologists make it the last family. 4. The order called Tectibranchiata is known by the branchiæ, more or less divided, but not symmetrical, situated along the right side or on the back, being covered by the mantle, which usually encloses a shell. The animals are marine and like the preceeding orders are hermaphrodite. The 5th order has been accounted a class under the name Heteropoda, but certainly presents only a deviative form of Gasteropoda, and as an order of that class has been named Nucleobranchiata. It includes swimming mollusks with the foot converted into a sort of fin, and the branchiæ consisting of feathery lobes on the posterior and left side of the back, with the heart, liver, and other viscera behind them in a common enclosure.

The 6th order is named Pectinibranchiata and is by far the most numerous of the whole, embracing nearly all those which have spiral shells of one piece and many with simply conical shells. The branchiæ composed of numerous segments ranged like the teeth of a comb, are attached in one or several lines to the lower surface of a cavity forming an opening between the border of the mantle and the body, and occupying the last whorl of the shell.

Order 7th Tubulibranchiata chiefly differs from the preceding in the animals being fixed to their place and hermaphrodite, whilst the sexes are distinct in Pectinibranchiata, but recent authorities with obvious propriety refuse to account these separate orders.

Order 8. Scutibranchiata is really distinguished chiefly by the sexes being united in the same individual, whilst the shell is widely expanded without an operculum. The members of the order as arranged by Cuvier are not very closely related, and this order also may be properly combined with Pectinibranchiata.

Order 9. Cyclobranchiata is distinguished by the branchiæ, like little leaflets or pyramids, attached in a cordon under the border of the mantle, the sexes being united in the same individual. The animals are the lowest of the great Pectinibranchiate group, to which, however, they certainly belong. The technichal character resembles that of Inferobranchiata, but the organization is very different. The last four orders having the branchiæ in the anterior portion of the body are now generally combined under the name of Prosobranchiata. Perhaps, it would be still better to make Cuvier's name Pectinibranchiata, which well expresses the common character, embrace them all. They constitute the specially typical group among the Gasteropoda, and their further sub-division is a subject of great interest.

Some late writers on the subject combining, as already explained, all the orders related to Pectinibranchiata under the name of Prosobranchiata, unite also Tectibranchiata with Nudibranchiata and Inferobranchiata under the common name of Opisthobranchiata, thus reducing the whole class to four orders. This, however, is liable to great objection from the decidedly distinct characters of Nudibranchiata, which seem manifestly to claim for it rank as an order. If we only reduce Inferobranchiata to Tectibranchiata, and give its natural and just extension to Pectinibranchiata, we have five well marked orders of which it seems evident that Nudibranchiata occupy the lowest place, and Pectinibranchiata, that which represents Gasteropoda among the orders. But Nucleobranchiata are remarkable for the high development of their organization, and for resemblance to the higher classes, Pteropoda and Cephalopoda, we may therefore place them first. Pulmobranchiata will without question stand second, and then we have the five orders reduced to their natural series. In forming his orders Cuvier relied on the different position of the branchiae, and on the comparative development of the reproductive system, the former being admitted as the leading character. Allowing the correctness of his opinion on each point, there are other considerations which justify the combinations now proposed, since, for example, the branchiae are essentially of the same kind in the whole of the Pectinibranchiata in the extended sense we have given to the term, and there are other points of resemblance uniting them as one great natural group, whilst the separation or union of the sexual distinctions may assist in determining the comparative rank of the families, though not allowed to multiply orders by breaking up a great natural assemblage.

Before we proceed further it is desirable to inquire what other kinds of characters are available in the present state of our knowledge for the arrangement of Gasteropod Mollusks, and how far we can determine their comparative importance. One of the most obvious characters is derived from the shell itself, its presence or absence, its form, its substance, and its colouring. It is now universally agreed that shells considered without reference to the animals are mere play things altogether destitute of scientific interest, and if valued for their beauty or variety destitute of higher claims on our attention; but when we consider them as a part of an animal—a hard deposit on his surface, moulded on his form, and expressing his external distinctions, we cannot but expect that the study of the hard covering may be also connected with that of the creature—that we may learn to make what can be well preserved an index to much which we have but occasional opportunities of examining, and cannot well retain for reference—nay, even from comparison of the shells, to know the structure of many animals whose organization we have no opportunity of examining at all, though their shells may be in our collection. It is true indeed that form alone is not a constant and certain index to structure, and cases occur in which shells might be placed beside one another, from their very close resemblance, though when we are acquainted with the animal we find that they really belong to widely separated parts of a natural system, but such cases are not common, and in such instances, closer observation furnishes some clue to the discovery of their real affinities.

A Gasteropod Mollusk has a soft elongated body with a calyptriform mantle on which the shell is moulded. Where the cone is short and wide below the shell is nearly or quite simple and limpet-like; where it is high and not very wide at the base, it is usually spirally twisted, so that the shell is turbinated. Monstrosities of some of the snails occur in which the spire is drawn out with only a slight spiral twist, and the normal condition of the Wentletrap (Scalaria pretiosa) shows the successive whorls prevented from touching and uniting, so that we see their separation, though the convoluted form is perfect. From these observations we may trace the relation between the most elongated spiral and the simplest expanded cap, and as it is obvious that the same deviations in this respect may occur in families otherwise differently constructed, we understand the phenomenon of a water snail resembling a limpet, and a Sigaretus, a Venus's ear, whilst the limpet-like snail occurring in fresh waters and being pulmobranchiate, and the Sigaretus

wanting the nacreous lustre, and being apparently an animal feeder, are sufficient in these cases to prevent mistake.

Among shell characters of most real importance are differences in the form of the mouth, especially the absence or presence of a channel and of appendages, and the mouth being circular or nearly so and complete all round, or pressed against the next whorl so as to become lunate, or for the circle to seem broken; the growth appearing to be uniform or interrupted, a special border being then formed to the mouth at the completion of each period, and the old borders remaining as ornaments on the shell; the absence or presence of tooth-like processes about the mouth, and of folds on the columella, and differences in the substance of the shell itself. Here, however, it must be noted that the channel in the border being accommodated to the opening of the Siphonal canal only indicates its existence and direction. This canal is connected with a burrowing habit, but it is possible for it to be present or absent in animals connected by much more important particulars of structure, so that we cannot implicitly rely upon it in our attempts at natural grouping. The presence, number, and peculiar form of the *Varices* or remains of former borders of the aperture may be good generic characters, but could not lead to higher combinations. Folds on the columella are deserving of much attention as auxiliary characters. Tooth-like projections of shelly matter are always of interest, but must be employed with great caution, more especially as our knowledge does not enable us to connect them with any structural peculiarity or special habit of the animal. Monoceros is scarcely now admitted as a genus, and its supposed species hardly even all belong to the same genus. Curious tooth-like projections variously placed around the aperture adorn numerous species of Helicidae and Auriculidae, but their systematic value, beyond characterising species, is very doubtful.

A class of characters much and justly valued since attention has been called to it and offering great assistance in the determination of natural families, is derived from the *operculum;* its absence or presence, its substance whether shelly or horny, and the mode of its formation whether from a marginal or a central nucleus, as well as its figure.

A still more important class of characters is derived from an organ characteristic of the higher (the cephalous) Molluscous animals and used by them in obtaining or preparing their food, which has been called their tongue or lingual ribband, but which needs an express name and should be spoken of by that which Huxley has proposed;

Odontophore. The teeth are usually ranged upon it, in a median and two lateral tracts, which have been called the rachis and pleurae terms which are scarcely necessary, and, the first at least, not free from serious objections. The Odontophore is sometimes short but often of great length, its edges behind the mouth being united so as to form a tube, which after passing for a short distance under the oesophagus is rolled or spirally twisted. It seems that the part in use is soon worn away and that the reserved portion is gradually pushed forward, the tube slitting open so as to afford a fresh surface. The form of the teeth both median and lateral, the number in each row and the number of rows vary in different families and different species, and are apparently adapted to the kind of food and the mode of procuring it employed by the animal. Hence, besides the use which may be made of the minuter differences as specific characters, the leading varieties, like the differences in the beaks of birds marking their kind of food or mode of appropriating it, serve to distinguish families, and may now be said to be of great and unquestionable importance.

Even so late indeed as the publication of Mr. Woodward's valuable manual, the extent to which they could be used seemed very doubtful, and he makes objections to their systematic value being estimated highly. He says: "It must be remembered that the teeth are essentially *epithelian cells*, and, like other superficial organs, liable to be modified in accordance with the wants and habits of the creatures. The instruments with which animals obtain their food are of all others most subject to these *adaptive* modifications, and can never form the *basis* of a philosophical system." He adds this note, "the carnivorous opossums have teeth adapted for eating flesh, but are not on that account to be classified with the placental carnivora."

It may be replied that our object being to bring together creatures of like organization and mode of living, the adaptive modifications of a common plan which determine the kind of food and mode of life are presisely what we ought to make use of, except for the highest divisions, and we find both the teeth of Mammalia, and, as already referred to, the beaks of birds, are of prominent importance in characterising even the great families. We should not allow resemblances or differences of the Odontophore of Mollusks to interfere with the classes or orders which depend on higher characters, nor ought we to use distinctions derived from this one part alone, or we should create an *artificial* system not perhaps better than others, and more difficult of application

as depending on microscopical observation; but not to use along with others a character manifestly connected with distinctive habits of life, would be to neglect means within our reach for determining natural affinities, and as knowledge on the subject has rapidly increased would no longer be thought of. Greater characters taken from the brain and the absence of placentation, separate the Opossums from the Carnivora, but their dentition establishes an important relation of analogy, giving these animals the same position in the nonplacentated or Lyencephalous sub-class, which the Carnivora hold in the Gyrencephalous and the Insectivora in the Lissencephalous. The objections or doubts of Mr. Woodward have not then any force which should prevent general attention to the structure of the Odontophore as an aid in classification.

I confess that I cannot see the advantage gained by giving names to the principal varieties in the disposal of the teeth as has been done by Troschel and Dr. J. E. Gray. Several of the varieties seem to me to be very slight modifications of each other; none of them could of itself alone give character to a natural group of animals, and I cannot perceive that the new terms afford any real assistance in stating the facts concisely and intelligibly. Along with the peculiarities of the Odontophore must be noticed the form of the muscle in which it is contained, and the absence or presence, form and markings, of what have been called the buccal plates.

Important characters are also derived from the number of the tentacles, the position of the eyes, the form of the foot and other circumstances relating to the animal. It is to the proper combination and subordination of these characters, giving prominence to general form and habit in distinguishing families, and in doubtful cases placing the creature in the group to which, considering all the characters it seems to have the nearest affinity, that we must look for a good natural system. In the higher divisions we look for fewer but more important distinctive marks accompanied by a certain recognisable aspect of each group, and its expression of one of those tendencies of development, five of which have been pointed out as the sources of the leading differences under each general type.

I cannot help here desiring to commemorate the obligations of all who study the Mollusca to Dr. J. E. Gray of the British Museum, for his important services to this branch of Science, as indeed to all departments of Natural Science.

I do not follow his system, and I may fancy that he at times sub-divides too much, and indulges too much in the invention of names; but we owe to him the pressing on our notice, the importance of attention to the foot, the operculum and the odontophore of Gasteropods; much assistance in estimating the value of shell characters, and the essential principle that knowledge of the animal, the operculum and the odontophore must always be united with that of the shell before we can be satisfied as to its systematic relations in a natural arrangement. This last principle is not always convenient in its application, and we are sometimes driven to rely for the time on resemblances, which cannot be accounted certain proofs of real affinity, but even then it is well to know where our information is deficient, and it is truly important that where knowledge is accessible we should be excited to seek it, not supposing our work to be done whilst essential points are neglected. Few indeed have contributed as much as Dr. Gray to the progress of this part of Malacology and let him be honored accordingly.

I have already expressed the opinion that Cuvier's orders of Gasteropods were founded on the right principles, though increasing knowledge has shown that he divided somewhat too minutely for natural grouping. Those who have corrected his plan seem to have gone to the other extreme in uniting as one order the strikingly different Tectibranchiata and Nudibranchiata, which they have immediately to admit as sub-orders, and which every observer feels to be as well separated from each other, as either of them from the other received orders. Correcting this error we have, as already given, the five orders of Gasteropoda, and it remains to consider more particularly their families. As excelling in the organs of sense and in power, and as manifesting an approach towards the higher classes of the sub-kingdom, the Nucleobranchiata, though deviating most widely from the true Gasteropodous type, must rank as the first order. Those known are divided into two families: Firolidae with elongated bodies and either no shell, or a cap-like very delicate shell enclosing the branchiae with the heart and liver on the back of the animal; and Atlantidae with a shell into which the animal can withdraw and which has an operculum. Other forms probably exist or had existed but are not known to us. The nearest approach may possibly be found in Janthina among the Pectinibranchiates, which almost imitates the muzzle of Firolidae and resembles them in dentition. The branchiae partially protected by the shell are exposed on the back, and the animals are pelagic and floating with the operculum converted

into a contrivance for carrying the ova. All this may indicate no more than a slight analogy, but it is curious and interesting. The best known animal of this order is the Carinaria whose delicate Argonanta-like shell is often seen in collections, and which has been often figured showing its habit of swimming with the fin, formed from the foot upwards and the back downwards.

The second order Pulmobranchiata has little direct affinity with the first, but takes this position from an idea that air-breathing marks more active life than water breathing, and from the certainty that the great order Pectinibranchiata occupies among the orders, the position which the class Gasteropoda takes among Mollusca, and the Molluscous subkingdom in the whole animal kingdom; whilst the lower place of the remaining two orders seems hardly liable to doubt. The most numerous members of the order, the snails and their allies, have the sexes united, which, considered alone would place them below a large portion of the Pectinibranchiata, but the highest Pulmobranchiata have the sexes distinct and closely resemble the highest vegetable feeders among Pectinibranchiata, the Odontophore corresponding exactly. The present order presents a very natural series and the families are well established. I cannot indeed believe Oncidium the type of a family distinct from Limacidae, or separate Aciculidae from Cyclostomidae. With these reductions the families are:

1. Cyclostomidae.
2. Auriculidae.
3. Helicidae, snails.
4. Limacidae, slugs.
5. Lymnaeidae, water snails.

Cyclostomidae have a horny operculum, generally a circular mouth and an odontophore like that of Litorinidae, with the sexes distinct.

Auriculidae have no operculum, the aperture elongated and denticulated; animal with two tentacles and sessile eyes behind them; a broad muzzle, united sexes, a horny buccal plate, and numerous teeth with a distinct median series.

Helicidae have usually a well developed shell capable of containing the animal, the body is spiral distinct from the foot. There are almost always 4 tentacles, the upper pair bearing the eyes. There is a horny crescent-shaped buccal plate, the differences of which form valuable characters. The Odontophore is oblong with numerous similar teeth like a pavement. The number of species is very great, and the differences of form striking.

Limacidae have the foot united with the body; tentacles and eyes as in the snails; mantle small, shield-shaped; shell small or rudimentary, usually internal or partly covered by the mantle; in Oncidium there is no shell, not even a rudiment, and the mantle completely covers the animal.

Lymnaeidae inhabit water or wet places; have a thin horn-colored inopercreulate shell with a sharp lip; the animal has only 2 tentacles the eyes being at their inner bases; the mouth has a buccal plate, and the odontophore resembles that of Helicidae.

Those who would satisfy themselves as to the value of the buccal plates and the form of the teeth as characters, should examine the observations on the Terrestrial Pulmonifera of Maine by Edward S. Morse, published in 1864. The numerous and excellent figures here given bring the matter clearly before the reader. The able author may be too fond of multiplying families and genera, but he is an acute observer and has made an important contribution to science.

It confirms our notion of the value of the character of the order drawn from the adaptation to air-breathing, that there is no common character of the Odontophore throughout the order, but we find its arrangements adapted to the special mode of life of the families, and even in some instances of sub-families or genera. We are also made to observe that the carnivorous character of the Odontophore does not necessarily indicate the highest position as to general development. These facts will be useful to us in the difficult inquiry lying before us respecting the subdivision of the great order Pectinibranchiata.

(*To be continued*).

ON METONYMS, OR TRANSLATED AND QUASI-TRANSLATED PERSONAL NAMES.

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Most readers are aware that the names Erasmus and Melanchthon are not the original native names of the persons who are thus usually designated in history and literature. They also probably know what the original names of these two distinguished men were. They know that Melanchthon is the German family name Schwartzerd, Blackearth,

in a Grecised form. They may remember, too, the anecdote of the popularity of his Loci Communes or Theological Summary, at Rome, while circulating as the production of one Ippofilo da Terra-negra, but its instant condemnation when discovered to be the work of the German reformer Philip Melanchthon. They may know likewise that the family name of Erasmus was the Low-German one of Gerrit, in High-German Gerhard, fancifully and no doubt wrongly held to be a corruption of Gernhaber, an antique synonym of Liebhaber, of which Erasmus, Beloved, was supposed to be a sufficient translation. Moreover it will be remembered by some that the prenomen of Erasmus, namely Desiderius (which is intended to be identical in sense with Erasmus the Beloved,) originated in the baptismal name of the little Gerrit, which was itself Gerrit, the same virtually as his surname: that, in fact, like Sir Cresswell Cresswell, the great scholar of Rotterdam was christened by his own family name, and that the reiteration that resulted was attempted to be rendered by the respectively Greek and Latin terms Desiderius Erasmus. (Both names were familiar enough at the time, as belonging to popular 'saints,' one being identical with the French St. Didier, the other with the Italian St. Elmo or Ermo.)

Now there are many other less familiar examples of somewhat similarly translated or quasi-translated names to be met with in literary history; and as we have not been so fortunate as to light on any detailed collection of such instances, we have thought it might be of some interest and even occasional utility, to make a record here of our own memoranda in this regard, incidentally jotted down from time to time. We have seen such works as Barbier's Dictionaire des Ouvrages Anonymes et Pseudonymes, published in Paris in 1822; Wheeler's Dictionary of the Noted Names of Fiction, published at Boston in 1865; and the Handbook of Fictitious Names by "Olphar Hamst," published in London in 1868. But in these we find no detailed list of the class of names now referred to; and which we have ventured to style Metonyms, translated or quasi-translated names.

Salverte has a chapter on translated names; but the scope of his work (History of the Names of Men, Nations and Places, in their connection with the Progress of Civilisation) did not require him to enumerate more than a few examples. In Lower's Patronymica Britannica, the Latinised names are of a class to be met with only in the old Charters and legal records of England. Baillet's Auteurs Déguisés, had the work been within our reach, might possibly have helped us. We

offer our collection simply as a contribution to a more complete list, for the use and information of the student who has occasion to consult the original authorities for the civil and literary history of the 16th century; and under correction, for we have not been able, in every instance, to recover the source of our notes. Hallam, Whewell, Disraeli, Dibdin and Brunet furnished us with some of them. Our translated names will be those which, like the instances already described, convey in a Latinised or Grecised form the sense, real or supposed, or approximated to, of the vernacular name. Our quasi-translated names will embrace such as have, for convenience, been moulded into a Latin form, and have assumed in the process a shape under which the vernacular form is not, at first sight, readily recognised; as, for example, Linnæus, for Linné, Grotius for de Groot.

At the period of the 'Revival of Letters,' when the Latin and Greek tongues came again to be familiarly understood among the literary men of Western Europe, and to be used by them with elegance in the writing of history and other works, and in correspondence and even common conversation with each other, it was found that the proper names of persons (as also of places) constituted, in many instances, sounds harsh to the ear, and forms uncouth to the eye, in the midst of the flow and harmony of the lately-revived, so-called classical languages. The plan was consequently soon adopted of softening and harmonising the names required to be used, either by translating them according to their etymology, or by resuming the forms of the same names as they were before becoming barbarised in the fourth and fifth centuries, or by suffixing convenient terminations.

For this smoothing-down of rough foreign proper names there was the authority and example of the great authors whose works were again becoming widely known. The Greek historians moulded to their own vocal organs the names of Persian and other Asiatic persons and places. Livy did the same with Etrurian, Oscan and Phœnician names. Cæsar and Tacitus did the same with places and persons in the West, the writers in each instance preserving in the metonym, material of high value now to the ethnologist and comparative philologist.

The fastidiousness of taste generated by the newly-revived studies carried men too far when, as in some of the literary clubs or academies in Italy, they adopted the custom of addressing each other by venerable names that did not, even in sound, belong to them: just as, centuries before, under the influence of another partial 'revival of letters,'

Charlemagne had saluted his Chancellor Angelbert as Homer, and Alcuin, the head of the Palace-school, as Flaccus. (It was characteristic of the age in which this earlier revival had happened, that Charlemagne himself was styled by a name not taken from Greek or Roman annals, but from the records of Holy Writ;—he was academically, so to speak, King David; while his superintendent of public works, and subsequent biographer, Eginhart, was addressed by the name of the ingenious nephew of Moses, Beseleel.) These are examples of pseudonyms, not metonyms: conceits playfully indulged in by great men, but not worthy of much attention. It was quite another thing to Latinise or Grecise a name that had become barbarised: or, when harsh and uncouth-looking from its Teutonic or other foreign constitution, to translate it, according to received analogies, into a corresponding equivalent term, in communications by writing or word of mouth, carried on between literary men.

The learned Greeks who found their way from Constantinople to Italy in the fourteenth and two following centuries, would readily shew their pupils how to transmute conveniently names that seemed uncouth; and to construct out of them others that would resemble those borne by themselves and by the Byzantine writers with whose works they were familiar. Here are the names of some of these literary emigrants: Johannes Argyropylus, John Silvergate; Antonius Eparchus, Antony le Préfet; Nicolaus and Zachariah Calliergus, Nicholas and Zachary Fairwork; Georgius Gémistus or Pletho, George Fulman. Any one of these might be a metonym from the Teutonic or some other Western dialect, similar to those which we are about to enumerate. The names of the Byzantine writers are of a similar stamp: Johannes Stobæus, John of Stobi; Photius, Bright or Manly; Maximus Planudes, Astray; Thomas Magister, the Teacher; Georgius Chœroboscus, Swineherd; Demetrius Triclinius, Butler, Buffetier; Theodorus Prodromus, Scout; Manuel Holobôlus, Alclod; Georgius Syncellus, Fellowfriar, Confrère, Chum; Constantinus Psellus, Stammerer; Georgius Pachymeres, Clumsy; Theodorus Anagnostes, the Reader; Johannes Philoponus, Lovework,—to say nothing of earlier and more venerable names, Latin as well as Greek, simple and compound, all possessing visible vernacular significations.

Almost as familiar as the instances of Erasmus and Melanchthon, are those of Œcolampadius, professor of Divinity at Bâle in 1528; Bucer, professor of Divinity at Cambridge in 1549; and Capnio, the very

learned preceptor of Melanchthon. The first is properly Hussgen, corrupted from Hausschein, Houselight; the next is Kuhhorn, Cowhorn; and the last is Reuchlin, Smoke. Capito, a friend of Bucer's, was really Koepstein, Headstone. Melissus, author of eight books of Meletemata, Studies, printed at Frankfort in 1595, is Paul Biene, Bee (Melissa, bee). We have also a printer at Bern, named Apiarius. Cochlæus, author of a Historia Hussitarum, and an opponent of the Reformation, was Wendlestein, Cochlæa, Periwinkle, Winkle. Perizonius, author of Origines Babylonicæ et Ægyptiacæ, was Voorbrock, Apron, perizon-e.

In the cloisters at Bâle, not far from the resting-place of Erasmus, is a tablet to his friend Episcopius; and near by are other more recent memorials to members of the same family, whereon the vernacular name of Bischoff is resumed. Pareus, author of three folio volumes of divinity, in 1593, was Wangler, wange being cheek in German, and pareia being cheek in Greek. Macropedius, a writer of Dramatic pieces for the young, was Langevelt, macro having reference to Lange, and pedius to velte, field, campus, pedion. Opilio was Schaefer, Shepherd, opilio being shepherd, as though ovilio, from ovis. Lentilius was Linsenbarht, a supposed progeny of linse, German for lentils. Malleolus, a modest diminutive of Charles Martel's name, was Hemmerlein, which is sufficiently English in sound to speak for itself. He was a divine of Zurich: some of his treatises were printed at Bâle in 1497. Jerome Bock, Anglicè Buck, a naturalist, whose Kreuter-buch was printed at Strasbourg in 1546, appears on the title page of the Latin version of that work, as Hieronymus Tragus, the equivalent of his name in Greek. Manneken, author of a Complete Letter Writer in 1476, elevates his family-name by Latinising it Virulus, not Homunculus. Kammermeister, a distinguished commentator on the New Testament, was Camerarius, Chamberlain. (His family-name was once Liebhard.) Loos, in Low-German, crafty, compiler in 1581, of Illustrium Germaniæ Utriusque Catalogus, is Callidius. Kallison, a pupil of Melanchthon's, became Callistus and Calixtus, Formosissimus. Ulrie Molitor in 1489 was doubtless a Mueller; as also Crato Mylius, a printer at Strasbourg; and a Farinator in 1477. Vermeulen is Molanus, and Walscemueller, Hylacomylus. The real name of Regiomontanus, the great mathematician at the close of the fifteenth century, was Mueller. Regiomontanus, Montrealer, is his designation as being a native of Konigsberg, Mont-real, in Franconia. Johannes de Tritten-

heim, a voluminous historical writer in 1546, is known as Trithemius. Jodocus Badius Ascensius, the learned printer, is no more than Josse Bade of the village of Asche, in Flanders. We meet with distinguished Hebrew scholars bearing the evident metonyms of Aurogallus and Acoluthus.

Giles Overmann, translator into Latin of the romance of the Ulespiegel (whence the French espièglerie), in 1657, is Ægidius Periander. The metonyms in -ander are very numerous. An obvious one is Neander for Neumann. Of this name there were many men of note. The family name of the modern theologian Neander was Mendel. He was born a Jew, and assumed the name Neander on relinquishing the Jewish faith. On a tablet in Westminster Abbey appears the following inscription under the name of a Franciscus Newmannus:—

Exutâ jam carne, animarum in sedo
Receptus, vere Neander factus est.

One Stephen Neumann figures as Homo Novus. Megander is Grosman. But Albertus Magnus is Albert de Groot. (His works consist of twenty-one folio volumes.) Theodorus Bibliander is Theodore Buchmann. Xylander, editor of Greek and Latin authors in 1532, was, in the vernacular, Holzmann, Woodman. Then we have several Osianders, Heiligmanner, a name now degenerated into Osmann; and a medical writer of Hesse, Johannes Dryander, John Eichmann. We may conjecture what the originals may have been of Onosander, Ganander, Nicander, Cratander, Kyriander and Melander. The last was perhaps Schaefer again, Sheep-man. Matthias Flach Francowitz, principal author of the Ecclesiastical History known as the Centuriæ Magdeburgenses, was Flacius and Flaccus Illyricus. Valentinus Paccus was Hartung Frid. (Hart, valens; Friede, pax.)

Conradus Dasypodius, a mathematician, and translator of 'Theodosius and Autolycus on the Sphere,' in 1572, was Conrad Rauchfuss, Hairy-foot. Lycosthenes, compiler of a once well-known volume of Apophthegmata published at Geneva in 1633, is Wolf-hart, that is, as Kilian says, Fortis ut Lupus. Maurolycus also seems to speak for itself. Neoaëtos is Neuenaar, aar being eagle, that is, aëtos. Comes Neuenarius, Comes Neætius, and Comes Novæ Aquilæ, all mean Count Neuenaar. Pelargus is Storch, that is, Stork. The family-name of Joachim Fortius Ringelbergius, in 1516, was also Storch. An Abbot Anser bore the family-name of John Huss, Latinised. Luscinius was Nachtigall. Godofredus Rabus is Godfrey Raaban, Raven. In Ra-

banus Maurus we have a hint of how 'raven' may have been applied in some cases as a sobriquet. Maurus is 'The Moor.' Petrus Niger, a German, was the author of a work, Ad Judæorum Perfidiam Extirpandam, printed at Esslingen in 1475. Coracopetra was Rabenstein. Other names from colour are Cyaneus and Brunus. One from taste is Sapidus, a metonym however, probably, from Weise, Wiseman. Frederic Barba-rossa, i. e. russa, red, will be familiar to all. (Gildebertus is said to signify much the same—Rutilus barbâ.) There are many Lupuses; and a Canius, who was a Netherlander, de Hondt, the Hound. Wolfgang, a common prenomen, appears to have been simply furnished with the termination -us; although it is explained to be Lupi incessus, Wolfgait. Musculus, diminutive of Mus, is Mauslein, Little mouse.

Crusius is a quasi-Latinisation of the Low-German Kruys, Cross; also of Kraus. There are likewise a Crucius, a Cruciger and a Crucigerus. Van Horn became Ceratinus, 'keras' being 'horn.' Vander Steen was à Lapide, 'steen' being 'lapis.' Erastus is Lieber, akin respectively to Erasmus and Liebhaber, 'liebe' being 'eros,' love. Thomas Naogeorgus is Thomas Kirchmeyer, 'naos' being 'Kirch, ecclesia,' and 'meyer,' colonus-villicus, farm-bailiff.

Several authors are named Cellarius; all probably Kellners, that is Cellarers: one, in 1661, published in Amsterdam an Atlas of the Heavens. There are three Opsopœi, in all likelihood Kochs, that is, Cooks. Latinised names from trades or occupations are numerous. Pellicanus was Kurshner, Furrier, one dealing in pelles, peltries. Messenmaker, Cutler, is Cultrifex, in 1479, from culter, a knife. Hermanus Figulus was Herman Töpfer, Potter. We meet with Piscator, Fischer; Agricola, Pachter, Farmer; Serrarius, Sawyer, Holzsager; Caspar Sagittarius, Archer, Bogenschüke; with Latomus, Miner, Steinbrecher; with Sartor, and Sartorius, Taylor, Schneider; with a Pistor, Baker, doubtless Becker; a Ravisius Textor, Weaver, Weber; a Tinctor, Dyer, Farber; a Sutor, Shoewright, Schuster; and a Lapidanus, Stoner, Steiner: also with a Kaiser Karl Fidicen, who was surely a Fiddler, Geiger, or Lutist, Löther. A Felix Fidlerus or Fiedlerus occurs. The last epistle written by Melanchthon was to a Johannes Aurifaber, Goldsmith. It is signed "Philip Melanchthon, brevi moriturus," p. 430, Ed. Elzev. 1647. Georgius Acanthius we may suppose to have been George Dorn, that is, Thorn. Rivinus, the botanist, we know, was Bachman, from bach, beck, rivulus, rivus; and Vander Boeken or Beken, Torrentius. Vander Bosch was Sylvius, and Fagius was Buchlein, diminutive of Beech.

Printers as well as authors allowed their names to appear in Latin and Greek forms. Several of the metonyms already noticed appertained to printers. Oporinus is Herbst, that is, Harvest. Eucharius Cervicornus, at Cologne in 1520, is Eucharius Hirschhorn, Staghorn. (We meet with Cornucervinus also for Von Hirschhorn.) Petrus Cæsaris, a Fleming, was Pieter Keysere. Petrus Perna was Peter Ham, Schinte. Graphæus was probably Schreiber, and Cephalæus Hauptmann; Nicolaus Lupus, Wolf, was a printer at Lyons in 1499. We have not at hand the famous Epistolæ Obscurorum Virorum. Some amusing imitations of metonymised names would doubtless be found therein.

It is unnecessary to remark upon such direct Latinisations as Zumptius, Zuinglius, Vossius, Arminius (Hermansen); or on such obvious ones as Vredius for de Vree, Venius for Van Veen, Arimæus for Van Arum, Musius for Muys, or Chœrius for Vander Keere, which in French is du Tour, that is, like Keere in Low-German, Turn or Circuit. Dodonæus, a physician and botanist in 1616, is Dodoens. Christian Gottlob Sachs was first Sachsius; then Saxius. Zypæus is Vanden Zype.

Judex is the name of a Danish writer on Printing. (We have the name Judge in English.) A Danish mathematician was named Nicolaus Raymarus Ursus. The Icelandic author of the Orkneyinga Saga, sive Historia Orcadensium, printed at Copenhagen in 1780, Jonas Jonæus, is, in effect, Jonas ap Jones. Reinier Gemma, surnamed the Frisian, must have been Jeweel, Jewel, in his own vernacular Low-German.

A surgeon of Ghent is renowned in 1722 under the name of Palingenius. This appears to have been a fanciful expansion of his real name, which was Palfin. In like manner, from a partial similarity of sound, the name of the Cretan grammarian Moscopulus was usurped by Peter von Musschenbrock, literally, Swallow-brake. Noviomagus is simply a local name for Nimeguen, anciently Nieuwmegen. His real name was Geldenhaur; as that of Pomeranus was Bugenhagen. Myconius we once supposed to be a Grecising of some word signifying Baldhead; but Pipericornius, literally Pfeffercorn, Peppercorn, in his Chronicon Thuringiacum, says, Fuit Myconius alio nomine Mecum dictus; but what Mecum may be a corruption of, is not evident. Tabernæmontanus, a naturalist, whose Eicones Plantarum appeared at Frankfort in 1588, was so named from his having been born at

Tabernæ Montanæ, that is, Bergzabern, a town in the Palatinate (stadt in der Pfalz).

The famous name Paracelsus was probably intended to express a relation to Celsus, the great medical philosopher of the first century, and seems to be formed on the analogy of 'paradoxus,' 'contrary to opinion;' as though it would describe one who could astonish Celsus. Two of his Tracts are entitled respectively, Paragranum, Paramirum. It has however been imagined by some that 'Paracelsus' has reference to 'Hohenheim,' a place from which his father derived an agnomen; the family-name being Bombast von Hohenheim. The complete series of names possessed or assumed by Paracelsus himself was: Philippus Aureolus Theophrastus Paracelsus Bombastus ab Hohenheim Eremita. He was born in 1493 at Einsiedeln, the site of an ancient Swiss monastery: in monkish phraseology, the neighborhood was styled Helvetiæ Eremus. Hence comes the final term in the series of names borne by Paracelsus, Eremita. The inflated and mysterious words adopted professionally by Paracelsus are said to have been the original 'Bombast,' as applied to language. Here is a brief specimen of a letter of his to Erasmus, who had consulted him at Bâle in 1522: 'Quæ mihi sagax musa et Astoos tribuit medica, candidè apud me clamans: similium judiciorum manifestus sum auctor. Regio hepatis pharmacis non indiget, nec aliæ duæ species indigent laxativis. Medicamen est magistrale arcanum potius ex re comfortativâ specificâ ex melleis abstersivis, id est, consolidativis.' More follows. (The Astoos is probably the mystic familiar, Azoth, kept by 'Bombastus,' as Butler speaks, Hud. iii. l. 628, "shut in the pummel of his sword.") Erasmus appears to have been well pleased with the opinion given. In his reply he says: 'Demiror unde me tam penitus noris semel duntaxat visum. Ænigmata tua non ex arte medicâ, quam nunquam didici, sed ex misero sensu verissima esse agnosco,' &c. The great specific of Paracelsus was a tincture of opium: a remedy omnino laudandum: hence by popular corruption our familiar word 'laudanum.'

In the metonymising of Italian personal names, the process is often simply to revert to the original form of the word. As when Perbuono becomes Perbonus; Giovinazzo, Juvenatius; Paolo Giovio, Paulus Jovius; Giovanni Giocondo, Johannes Jucundus; Feboni, Phœbonius, Vettori, Victorius; Settali, Septalius; Navigero, Naugerius. Thus, Accorsi, author of the "Great Gloss," a work on Law in six folio volumes, published in the 13th century, is also Accursius. Sometimes a compound name is represented by a similar compound, as when

Mezzobarba, the name of an annotator on Occo's Numismata Imperatorum Romanorum, becomes Mediobarbus. Sometimes the name is Latinised by a translation of its meaning in Italian: as when Banchieri, Bankers, Exchange-brokers, became Cambiatores, and Ricci, 'of the curled locks,' professor of Belles Lettres at Florence in 1500, became Crinitus, and Pietro Capretto, an Italian mystic writer in 1492, became Petrus Hædus (kid). Giovanni Giglis is Johannes de Liliis, Giglis being from Giglio for Lilio, that is Lilium, Anglicè, Lily. Occasionally the name is Grecised in a similar manner: as when Forteguerra becomes Crateromachus, 'Strong i' th' Fight,' and Buonacorsi is supposed to be sufficiently expressed by Callimachus, signifying probably for the occasion, 'Of graceful action in the Tournament.' Johannes Victor Rossi, a Roman satirist, is, somewhat mixedly, Janus Nicius Erythræus, and Giampietro Arrivabene, elegantly, Eutychius. Ritius represents Riccio; also Riz, Ris and Rit. One would have supposed that Galeotto, 'Galley-slave,' would have chosen some more elaborate metonym than 'Galeottus.' By entitling a work of his 'De vulgo Incognitis,' he, in the 15th century, forestalled the 'Things not generally known' of Mr. Timbs.

Local, territorial and family appellations are expressed by appropriate local and gentile adjectives. Thus Rucellai, head of the Platonic academy at Florence, is Oricellarius; Chiaramonti, Claramontius; Lorenzo de' Medici, Laurentius Mediceus; Ambrogio di Calepio, Ambrosius Calepinus. In Belcarius (Hist. Rer. Gallicarum), Ercole d'Este becomes Hercules Atestinus.

We have an interest on this continent in the name of Amerigo Vespucci. On the title page of his Novus Mundus, addressed to Lorenzo de' Medici, it is metonymised into Albericus Vespuccius. Albericus was softened into Americus: Italianised, it became Amerigo. In old French he is called Emeric de Vespuce. This identifying of Amerigo with Albericus determines the prosodiacal quantity of the penultima of America in Latin, all the Teutonic proper names in -icus having it long; but custom has rendered it short in America. In a volume of Latin and other verse in the Bodleian, of the date 1761, we have the old soldier of the reign of George II. describing his exploits on this continent and speaking in good iambics of

> Americæ sinus, et immanes lacus,
> Comata sylvis montium cacumina,
> Gravesque lapsus fluminum, urbium situs
> Et barbarorum corpora, et vultus truces, &c.

The familiar name of Columbus is the pure Latin form of the old North Italian and old French Colon, which in the latter language is also Coulon. Both are corruptions of Columbus, the masculine form of Columba, Dove. Peter Martyr looks as if it were a name belonging to our list of metonyms, but deceptively so. There are two Peter Martyrs. One the author of an Enchiridion de Nuper sub Carolo repertis Insulis, printed at Bâle in 1521, and of the De Orbe Novo Decades octo, printed at Alcala in 1530: works of interest, both of them, to us on this continent. On the title page of the old translation of the first-mentioned little tractate his name figures as Pierre Martyre de Millan: and in a copy of the work, now lying before us, he is styled Petrus Martyr, ab Angleriâ, Mediolanensis. The other Peter Martyr is the reformer so called, who was a native of Florence and professor of Divinity at Oxford in the reign of Edward VI. His family-name was Vermiglio or Vermeille, Latinised into Vermilius. Petrus Martyr was the name under which a church hard by his father's house was dedicated. This suggested a baptismal name for the child.

Dante's name is an abbreviation of Durante; and Durante, as an Italian family-name, is Latinised into Durandus. In the case of the poet, however, it assumes a kind of Greek form, Dantes, when metonymised. In Keble's Prælectiones de Poeticæ Vi Medicâ he appears as Dantes Alighерus (to express Allighieri); and in the Poemata et Inscriptiones of Landor we have

> Danten sæcula quina transierunt
> Cum Florentia funebres honores
> Solvit manibus optimi poetæ.

In the church of St. Onofrio at Rome is to be seen the brief inscription over the remains of Tasso: TORQUATI TASSI OSSA. Tasso we thus learn became Tassus, just as Bembo became Bembus. Paolo Sarpi, better known as Fra Paolo and Father Paul, historian of the Council of Trent, is Paulus Sarpus. But his name is often concealed under the anagram Pietro Soave Polano, formed from the words Paolo Sarpi Venetiano. (There is a writer on German Typography, named Paul Pater.) Aldo Pio Manuzio, the father of the Alduses, each, like himself, a learned printer either at Venice or Rome, is Aldus Pius Manutius. Aldo itself is said to have been Theobaldo abbreviated.

The name of Tifi Odassi, a writer of Macaronic verse in the 15th century, has, like that of the artist Taddeo Gaddi, when uttered by Italian lips, an Hibernian ring. In Latin it is dignified into Typhys

Odaxius. This was probably a taking advantage of sounds. Giovanni Paolo Parisio in that way became Johannes Paulus Parrhasius, a name famous in its day, and liable to be confounded with that of the artist-pupil of Socrates. (In passing, it may be remarked that some Irish names submit readily to the Italianising and Latinising process. The well-known Montreal name Donegana looks as if it were an example of this; and on the title page of a Compendium, in Latin, of Irish Church-history, anno 1621, we have it set forth that it was composed 'à Philippo Osulleuano Bearro, Iberno.') In Nicolaus Laurentius for Cola di Rienzi, we have a correction in Latin of a kind of slang once in vogue in Italy in regard to names,—the custom, that is to say, of speaking of persons of note by abbreviated, nursery-names. Giotti's name is said to be a fragment of Ambrogiotto, that is, little Ambrogio or Ambrosius. Italian writers Latinised the Scottish name Crichton into Critonius. In Italian itself the famous Crichton was Giacomo Critonio. Buchanan makes it Crihtonius. Here we have helps to the pronunciation of the original name. In Latin versions of some of the treatises of Savonarola, that name is treated as purely classical. We have also his letters printed at Paris in 1674: Hier. Savonarolæ Epistolæ. He is ordinarily known as Hieronymo and Girolamo da Ferrara: and is frequently quoted as Hieronymus Ferrarius, that is, by his Christian and local names Latinised. Old English writers speak of him as Jerome of Ferrarie, and Jerom Ferrarie.

The proud name of Julius Cæsar Scaliger or Scaligerus, eminent in the literature of the 16th century, was properly J. C. della Scala, of the della Scalas de Bordone, who were allied, it was asserted by Julius, to the princely della Scalas of Verona. Some who were irritated by the arrogance and ostentatiousness of Julius, professed to know that his name was simply Bordone; and that della Scala denoted the sign of his father's trade or the street where he lived. Joseph Justus, the illustrious son of Julius, took the trouble to re-assert a family connection with the noble della Scalas. This drew forth from Gaspar Scioppius, at Mentz in 1607, a refutation, or supposed refutation of that claim—Scaliger Hypobolimæus, (the supposititious Scaliger), hoc est, Elenchus Epistolæ Josephi Burdonis, pseudo-Scaligeri de Vetustate et Splendore gentis Scaligeræ. Sannazaranus is a quasi-Latinisation of Sannazzaro, St. Nazarius, author in 1502 of the Arcadia, a pastoral romance, which was, in part, the model of our own Sir Philip Sidney's Arcadia. This writer is also spoken of by his academic pseudonym

Actius Syncerus. 'The name of the Neapolitan poet Cariteo is the Italian form of his academic name, Chariteus. In this instance, the assumed name has caused the family-name to be forgotten.

Among French metonyms, that of the Stephani will perhaps be the most familiar. Vernacularly, the Stephani were the Etiennes, Estiennes, or Stephenses, a succession of learned printers who, throughout the whole of the sixteenth century, did admirable service. Henry, Robert, and Henry, junior, of this name, have the honour to be sometimes distinguished from each other in imperial fashion, as Stephanus I., II., III. Charles, Paul and Antony Stephens were also printers, but of less note. Another familiar metonym to be noticed here, in connection with the Etiennes, although otherwise out of its place, is Scapula, probably Schulterblatt, Shoulder-blade. Not many years since, 'Scapula,' like 'Donatus' and 'Calepinus' previously, had almost merged its personal associations in those of a book. A 'Donat' was a grammar: a 'Calepin,' in French, was a note-book: and a 'Scapula' was, with us, a certain large Greek Lexicon. It had an origin not reputable. While Henry Stephens was bringing out his Thesaurus Linguæ Græcæ, an assistant in his printing-office, Scapula, secretly made an abridgment of that ponderous work, and subsequently published it at Bâle. The lesser book, though itself of huge size, yet being the smaller of two evils,—(the greater being in the form of four folio volumes)—the sale of the latter was hindered, and the interests of Stephanus III. were so seriously interfered with, that his bankruptcy ensued. A Scapula, now, is philologically valueless.

In the 16th century, we meet with the name Odet de Turnebu, borne by the author of a French comedy; and with Adrianus Turnebus, in the vernacular, Turnèbe, a Greek scholar and critical annotator. This name is said to be, in fact, the Scottish name Turnbull, Gallicised first into Tournebœuf, and then partially Grecised into Turnebus, where -bus represents bous, that is, bœuf, although in verse the termination is found short as well as long in quantity. The original Turnbull, in the time of King Robert Bruce, was, according to the Scottish legend, called Ruel. In 1644 we find printed at Paris a volume in quarto entitled Adami Blacvodæi Opera Omnia, including Varii Generis Poëmata. We here hardly recognise, in its Latin guise, the familiar Scottish name of Blackwood. Marbœuf, a bishop of Rennes, Latinised his name into Marbodus.

In Sammarthanus we have a base metonymisation of the name 'de

Sainte Marthe.' Two brothers of this name, Scævola and Louis, began the Gallia Christiana, a Church-history of France, publishing four volumes in folio under that title, in 1656, a work that has since swollen, without being completed, to fourteen volumes in folio. With this name we may compare the probably more familiar 'Nostradamus'—which is a similar base rendering of 'de Notre Dame'—the name, in the vernacular, of the great 'prophet' of 1555, "médecin du Roi Charles IX., et l'un des plus excellents astronomes qui furent jamais," so styled on the title page of the Lyons edition of his predictions in 1611. Lodelle's epigram on this personage is well known:—

> Falsa damus cum nostra damus, nam fallere nostrum est,
> Et cum nostra damus, non nisi falsa damus.

Hieronymus Natalis, author of Meditationes, &c, in 1594, is Jerome Noël: that is: Noël having been, through the Provençal Nadal, Naël, originally Natalis, Noël is Latinised back into that form. Comitum Natalis, author of a work on Hunting, in 1681, is Noel des Comtes. Petrus de Natalibus, on the other hand, in 1493, is Pierre des Natalles.

In 1590 we meet with Guidonis Conchylii Poëmata. These are the Poems of Guy Coquille, jurisconsult and poet. Cornelius à Lapide, author of ten folio volumes of Scripture-criticism in 1657, is Corneille de la Pierre. The great grammarian and dialectician, Ramus, slain in the massacre of St. Bartholomew, was in plain vernacular, Pierre de la Ramée. But Camus, Caylus, Simus, Datus, Reglus, Dumus, and some others of a like appearance, do not belong to our metonyms.

Johannes Viator, a commentator on the book of Job, is Jean Pélegrin. Petrus Comestor, whose Historia Scholastica super Novum Testamentum was printed in 1473, was Pierre le Mangeur. Antonius Sylviolus is Antoine Forestier; and Sylvius is du Bois. Macarius is l'Heureux. Dionysius Exiguus is Denis le Petit. Johannes Parvus is Jean Petit. Mercator is Mercier. Petrus Sarcinator is Pierre le Couturier.

Auratus is Dorat. Calceatus is Chaussé. Clericus is le Clerc. Curtius is le Court. Clusius is de l'Ecluse. Crucius is Le Croix. Creuxius is Le Creux. (This Le Creux is the author of a Historia Canadensis, seu Novæ Franciæ liber x, ad annum Christi MDLVI, printed at Paris in 1664.) Calvinus is Chauvin, Bald. Cognatus is Cousin. Paschasius is Pasquier. Regnius is le Roi. Renatus is Réné. Benenatus is Bienné, bookseller and printer in Paris in 1570.

Faber is Favre and le Fevre, *i. e.* Wright or Smith. Aurifaber is Orfevre, ouvrier en or. Tannaquil Faber is Tannaguy le Fevre, father of the learned Madame Dacier. Belcarius (Rer. Gall. Hist., 4-5.) speaks of Jacobus vulgo Cor appellatus: Cordatum, he adds, quod Latinis aliud sonat [viz. Wise], quidam vocare malunt. This is the famous, so-called French Argonaut, Jacques Cœur, of the year 1480. (See an admirable portrait of him at the beginning of his Life, by Louisa Stuart Costello.)

Johannes Vulteius, an epigrammatist of Rheims in 1537, is Jean Faciot, vultus and facies being akin. Omphalius is du Bellay, perhaps from a fancied connection with Umbilicus, through the Italian Ombelico, Bellico. Philibertus Hegemon, author of a book of Fables in 1583, is Philibert Guyde. Hadrianus Junius for Hadrian le Jeune seems to be a base metonym; as also are Pinus for du Pin and des Pins, and Feuardentius for Feuardent. A French copyist in 1344, is named Thomas Plenus Amoris: in English Fullalove occurs.

Latinised local surnames are common: Nicolaus Vernuleus, author in 1656 of Johanna Darcia, vulgo Puella Aurelianensis, is Nicholas de Vernulz. Jacobus de Vitriaco is Jacques de Vitry. (We meet also with a Ph. R. Vitriacus.) Demontiosius is de Montjoisieu. Bellojocanus is de Beaujeu. Alanis de Insulis is Alaine de l'Isle. De Veteri Ponte is Vipont. De Capite Fontium is Cheffontaines. Porretanus is de la Porrée. Serranus is de Serres. Licius is de la Lice. Baius, de Bay; Plovius, de Blonay. No remarks are necessary on Budæus for Budé, Finæus for Finé, Gallæus for Gallé, Duræus for Duré or Dury, Danæus for Danès, Cartesius for Des Cartes: on Petavius for Petau, Salmasius for Saumaise, Santolius for Santeuil: or on Muretus for Muret, Huetius for Huet, &c. Helvetius was probably, vernacularly, le Suisse, the Swiss. Theodorus Beza is Theodore de Bèze, like our Beda for Bede. He was also fancifully transformed into Adeodatus Seba. De Thou, commonly known as Thuanus, President of the Parliament of Paris, in his Universal History of the period 1546–1607, written in Latin, ingeniously translates the modern names, carrying the process to an extreme. With him, Chartier or Cartier is Quadrigarius, Charioteer; Entragues, Interamnas; Des Marets, Paludanus, &c.

In the Spanish and Portuguese languages, metonyms, when they occur, will be, in many instances, as in Italian, a return to a real or supposed ancient form. The Spanish name Sanchez thus becomes

Sanctius, and the Portuguese Estaço, Statius. Enzinas, the first translator of the New Testament into Spanish, is Grecised into its equivalent, Dryander, Oakman, Aikman. The first person who sailed round the world was a Spaniard named Sebastian Canus. A learned Spaniard, author of three folio volumes of Institutiones Morales, &c., named Azorius, died in 1603. An eloquent Spanish prelate who, dying at the age of 40, left twenty-seven folio volumes of Theology, was named Tostatus. Each of these appears to be a Latinised name. In Spain, during the Moorish occupation, Oriental and Western tongues were in close contact. From this fact we derive the advantage of having some difficult names moulded for us into convenient shape. Avicenna, for example, is more readily uttered than the full native name—Abu Ali Hussain Ben Abdalla Ben Sina. We speak of the great commentator on Aristotle as Averrhoes, instead of Ebn Roshd. Rhases, a medical authority is, in full, Abu Beker Muhammed Ben Zacharia El Rasi. He is sometimes also Rhazeus. Albategnius is Muhammed Ben Gebir Albatani. Boabdilla is Abu Abdilah. Conversely, as we are informed, in Arabian writers Hippocrates figures as Bograt, Hipparchus as Abrachis, and so on. In some Spanish documents referred to by Froude, the English name Hawkins appears as Achines.

Oriental names and titles familiar to us through the Greek and Latin, as Xerxes, Darius, Ahasuerus, Porus, Chosroes, Sapor, would not be recognised by us in their vernacular forms.

After the Greek civilisation had invaded the previously-isolated Palestine, a custom arose there of adopting for use in intercourse with western men, western names possessing, to some extent, a like sound. Hillel became Pollio; Joshua, Jason; Onias, Menelaus; Silas, Silvanus; Saul, Paul; and Hebrew or Aramaic names were made to assume a Greek form, Eliakim becoming Alcimus; Amittai, Matthæus; Yeragon, Hircanus. Even translations of names occur: as when Elnathan or Nathaniel becomes Dositheus or Theodotus. Tertullian's untenable theory may here be referred to: Quis nescit, he asks in his Liber Apologeticus against the 'Gentes,' nomen Iovis à Iehovâ deductum; et Adonis ab Adonai, Iacchi à Iah, et Vulcani à Tubal Cain, et Musæi à Moyse, et Iani, quo Noahum intelligo, à Iain vino. "By such devices," Huet said to Bochart, "the Hebrew or its dialect is made to furnish the origin of the names of King Arthur, and all the knights of the round table of Charlemagne, and the twelve worthies of France; and, if required, of all the Incas of Peru. Was it not won-

derful sagacity in a German whom I knew, who would prove that Priam and Abraham, Æneas and Jonas, were the same persons?"

In the case of Chinese names the process of Latinising has been of use. Western men would not be in the habit of speaking so readily of Confucius and Mencius had not some ingenious Latinist brought Kung-fu-tse and Meng-Tseu into those respectable forms. In like manner Tao-tze might be Taocius. (Somewhat similarly, Zerdusht or Zarathustra has been moulded into Zoroaster.)

Sclavonic proper names, as exemplified in some Polish and Russian examples, look as if it would be difficult to make them presentable in Latin or Greek form. But to one familiar with the philological history of such names a legitimate mode of metonymising them would present itself. It is evident that such names as Przezdziecki and Oleszczynski, without manipulation, would look ill at ease in a page of Latin. Sarbiewski, we observe, is metonymised into Sarbievius, and the family of Leszynsky is spoken of by de Thou as the domus Lascinia. The real name of the Polish poet Acernus, who died in 1608, was Klonowicz. (A sister of the emperor Justinian, by birth a Mœsian, was called in her native speech Biglinitza: in Latin she became Vigilantia.)

Early Teutonic names have been subjected to the metonymising process. To the Latinisation of such names as Merwig, Chlotwig, Dietrich, are due the familiar Meroveus, Merovingian, Ludovicus, Louis, Theodoric. Deutsch or Teutsch itself was transformed in Italy into Theotiscus, whence the familiar, but (until lately) detested name Tedesco. On a medal of Gregory VIII., commemorative of the massacre of St. Bartholomew, we have the legend VGONOTTORUM STRAGES, 1572, where the word Huguenots, or Eid-genossen, Oath-bound associates, is metonymised, without being translated. Our 'Vortigern,' however, is more euphonic than the Latinised names assigned him by Gildas and Nennius. In the former he is Gurthrigurnus: in the latter, Guorthigirnus.

In England, the Latinisation of a proper name has seldom availed to supersede its vernacular form; nor does it appear that the practice of translating into expressions of equivalent meaning was in much favour. In a few instances, local epithets as designating individuals became familiar. Verulamius would be pretty widely recognised; but popularly, to this day, Francis, Baron Verulam and Viscount St. Albans, is simply Lord Bacon. Armachanus would be held to denote either the pre-Reformation reformer Richard Fitz Ralph, archbishop of

Armagh in 1347, who translated the Bible into the Irish language; or else the illustrious James Usher, archbishop of the same see in 1626. Malmesburiensis might be taken perhaps for Thomas Hobbes; or else for William of Malmesbury, whose real name was Somerset. Odericus Vitalis is always quoted under that Latinised form. He was born at Shrewsbury in 1075. (The name of the Continental Vitalis is said to be a conceit for Vita Lis, 'Life is a Strife.') Asserius Menevensis, the adviser of Alfred the Great, is usually Asserius; but he is sometimes Azurius, from the Welsh asur, azure. He was a native of Wales. Giraldus Cambrensis is seldom Anglicised. Caius is Key or Kaye. Faber is, as we have seen, Wright or Smith. Carus may be a Latinisation of Car or Ker. (Buchanan so Latinises Ker.) Alabaster is Arblaster, *i. e.* Arbalistarius, Low-Latin for a cross-bowman. Sylvester is Boys, duBois. Nequam was probably, in the first instance, Neckham. With 'William Rufus' all are familiar. Cæsar, as an English surname, has arisen from the disuse of a real family surname. Sir Julius Cæsar, master of the rolls, in the reign of James I., thought fit to drop the surname borne by his Italian ancestors. His father's name, on his migrating to England, from Previso, in 1550, was Cæsar Adelmare-Dalmare, or Dalmarius. The first Earl of Chester, nephew of the Conqueror, was Hugh Lupus. Plantagenet comes near the Latin, de Plantâ Genistâ, 'wearing the cognisance of the broom-spray.' Duns Scotus means probably 'Duns of the northern dialect.' He was born in Northumberland. Erigena, on the face of it, is Erin-born. His full name was Johannes Scotus Erigena—a tautology probably, as in A. D. 880 Scotus alone would denote one 'Erin-born.' Pelagius is a Grecising of Morgan, Armoricus, 'of the sea-board.' He was abbot of Bangor in A. D. 400. Reginaldus Polus and Poli Synopsis are combinations not unfamiliar to the English eye. Each involves a Latinisation of the common name Poole. Patrick Young, librarian to James I., metonymised his name into Patricius Junius. There is an author in 1602 of a Historia Britanniæ Insulæ ab Origine Mundi, named Richardus Vitus, who, at Basingstoke, where he was born, would have been vulgarly known as Richard White. (Among continental writers there is a Hugo Candidus. Rhabanus Maurus was, as we have already seen, famous in the ninth century, together with numerous Nigers before and since.) Bovill is Bovillus, Bullock. Erasmus so Latinises the name of his English correspondent Bullock. Lovell is Lupellus, diminutive of Lupus. Llewellin has been Latinised into Leonellus.

Brunel also probably represents indirectly an animal name. The popular satires in which beasts and birds are made to speak and act like men, brought into common use such terms as Reynard, Grimalkin, Bruin, Chanticleer, Partlet. There was in circulation in the 12th century a Speculum Stultorum, entitled Brunellus; where Brunellus stands for a well-known patient but much abused quadruped. The author of this production was an English monk named Nigel Wiroker.—Erasmus makes Colet, Coletus, although the name, uncorrupted, is said to be Acolyta. Sir Thomas More, Erasmus metonymises into Morus. Influenced by the sound, he playfully inscribes to the English Chancellor his famous satire, the Encomium Moriæ, 'The Praise of Folly.' "Quæ Pallas istuc tibi misit in mentem inquies?" he supposes More to say to him on the occasion; he replies: "Primum admonuit me Mori cognomen tibi gentile, quod tam ad Moriæ vocabulum accedit, quam es ipse à re alienus. Es autem vel omnium suffragiis alienissimus. Deinde suspicabar, hunc ingenii nostri lusum tibi præcipuè probatum iri, propterea quod soleas hujus generis jocis, hoc est, nec indoctis, ni fallor, nec usquequaque insulsis, impendio delectari, et omnino in communi mortalium vitâ Democritum quendam agere." Cecil, Lord Burghley, allowed his name to be converted into Cæcilius, as though he had been descended from the gens Cæcilia of ancient Rome. The name was really Seysil, and previously Sitsilt. Belcarius, (de Beaucaire, the reforming archbishop of Metz,) in his Rerum Gallicarum Commentarii, Latinises Seymour into Semerus. With him, Leicester as a title is Licestrianus, and Warwick, Varvicus. Erasmus styles the Marquis de Vere, Princeps Verianus. Payne Fisher, Oliver Cromwell's poet-laureate, called himself Paganus Piscator.

With Sleidan, in his translation (published at Amsterdam in 1656) of Froissart and Philip de Comines, Derby is Derbius, the Earl of Derby is Comes Derbius; Lancaster, Lencastrius; Gloucester, Clocestrius; Harcourt, Haricurtius; Howard, Havartus; and St. Leger, Calangerius, where the English pronunciation of St. Leger is attempted to be expressed. The author of the so-called Chronicle of Turpin, first printed at Paris in 1527, makes Fergus, Ferragus and Ferracutus to be the same name. A quotation in a note to Browning's Paracelsus speaks of "Anglum quendam Rogerium Bacchonem." This is Roger Bacon, the "wonderful doctor" of the 13th century to whose writings Paracelsus is reported to have been much beholden.

Hallam says of Buchanan's Rerum Scoticarum Historia, "Few modern histories are more redolent of an antique air." Lit. Hist. ii. 356. The illusion is maintained by the classical sound of the proper names euphoniously metonymised, without regard, however, to their etymology. With Buchanan Ramsay is Ramsæus; Huntley, Huntliæus; Cunningham, Cunigamius; Andrew Ker, Andreas Carus; Colin, Calenus; Arthur, Arcturus; Bruce, Brussius; Eliot, Æliotus; Creighton, Crihtonius, &c. Wishart he ventures to make Sophocardius. The name of the early Scottish historian Hector Boethius is a Latinisation of Hector Boëce, Boeis, probably Boyce. Sometimes he is Bœotius. We have seen Boyd transformed into Bodius, Price into Pricæus, and Ross into Rossæus. Alexander Ross, author of the curious cento entitled Virgilii Evangelizantis Christias, thus Latinises his name: although at the close of his dedication ad Illustrissimum Puerum, Carolum, Magnæ Britanniæ Principem, (afterwards Charles II.) he subscribes himself Alex. Ros (Dew). On the title page (ed. Lond. 1638,) there is a representation of himself, crowned with laurel, and blowing a trumpet: an epigram underneath, with allusions to the conceit in Ros, explains the whole:

Hæc est Virgilii quam cernis buccina, nuper
Muta, sed ad flatum nunc animata meum.
Illius hæc laurus; jam nostra in fronte virescens
Quæ, nisi Ros foveat, marcida laurus erit.
Quid sine voce tuba est? vel quid sine Rore corolla?
Buccina voce crepat, laurea Rore viret.

Owen, the epigrammatist, is, on his own authority, and that of his encomiasts, at the beginning of his little volume, Audoënus. Andrew Borde, the original 'merry Andrew,' author of the 'Merrye Tales of the Madmen of Gotham,' called himself, by a kind of Artemus-Ward effort, Andreas Perforatus (Bored). The title page of Howell's 'Familiar Letters' has a Ciceronian aspect by virtue of its first heading—Epistolæ Hoellianæ. Fuller, in his Worthies of England, (i 407) plays in his usual strain, on the name of Bp. Jewel. "It may be said of his surname, nomen, omen; Jewel his name and precious his virtues; so that if the like ambition led us Englishmen, which doth foreigners, speciously to render our surnames in Greek or Latin, he may be termed Johannes Gemma, on better account than Gemma Frisius entitleth himself thereunto." (Gemma Frisius we have already noticed.)

The ambition in 'foreigners' here slightingly glanced at by Fuller, was at a later period satirised by Arbuthnot in the proposed 'Memoirs of Martinus Scriblerus'; and by Sterne in his pretended quotations from Slawkenbergius, Metheglingius, &c. Almost the only names of Latin sound wont to be mentioned in modern English literature are those of the abstractions, Junius and Sylvanus Urban. In the Poëmata et Inscriptiones of 'Savagius Landor' the recent names of Brougham, Canning and Southey appear as Brogamus, Caninius and Sutheius.

A few titular episcopal signatures of Latin form, also, continue to be familiar to the English eye; such as Oxon., Ebor., Winton., abbreviations of the proper local adjectives in Latin. It is a note of the temper of the times, that a practice has crept in of writing, in the sense here referred to, Exeter instead of Exon., London instead of Londin. (short for Londiniensis). (According to old usage, 'Toronto' in this sense, should be written 'Toronton;' *i. e.* Torontonensis; episc. being understood; on the analogy of Avenionensis from Avenio, Sulmonensis from Sulmo, &c.: and Colombon. for Colombonensis from Colombo in Ceylon.) It is not wholly alien to our subject to mention here that although Canadensis is a usually received term, in Science and Latin prose, Ferrarius, in his work on the 'Culture of Flowers,' printed at Rome in 1733, repeatedly employs Canadanus. He speaks of "fraga Canadana insolitæ magnitudinis," 'Canadian strawberries of an extraordinary magnitude,' and of a "vitis Canadana," 'a Canadian vine,' as flourishing in the Gardens of the Barberini palace. (The word seems to be founded on the analogy that has produced Cuban from Cuba, Texan from Texas.) A local possessive formed in Latin from 'Ontario,' viz. Ontarius, may also have some interest. It occurs in the Bodleian volume of Academic verse of the time of George II., before referred to:

> "Jamque novæ gentes et centum uberrima regna
> Se Britonum titulis ultro regalibus addunt.
> Ex quo præruptis scopulis plaga pinea vastum
> Obsidet Osvegum, sonituque per arva marino
> Lata fremit, lacuumque Ontaria maxima sævit."

In 1551 Sebastian Castalio or Castellio produced a translation of all the books of the Bible in flowing and pleasant Latin. It is dedicated to our Edward VI. In it, the Jewish and other oriental names have a classic aspect, by being provided with suffixes and declined in accordance with the demands of the construction. Sir John Cheke said of

this translation: (vide p. xxxii. Introduction to Castalio)—"Mehercle, majorem percipio fructum in legendo Castellionem quam in volvendis omnium scriptorum commentariis: oratio facilis est, explicata, dilucida, suavis, concinna et diserta: verba pura et Latina et quæ propius naturam rationemque Græcæ Hebraicæque locutionis attingunt." For comparison, here is a passage from Castalio: "Pudet confractum Moabitam, ejulate quiritantes, nunciate ad Arnonem periisse Moabitam, sumptumque supplicium esse de terrâ campestri, de Helone, de Jasa, ... denique de omnibus Moabiticæ terræ oppidis tam remotis tam vicinis." The corresponding passage in the Vulgate version runs as follows: "Confusus est Moab, quoniam victus est: ululate et clamate, annunciate in Arnon quoniam vastata est Moab, et judicium venit ad terram campestrem; super Helon, et super Jasa, ... et super omnes civitates terræ Moab, quæ longe et prope sunt."

In 1661, Duport, regius professor of Greek in the University of Cambridge, turned the Psalms of David into Homeric Greek, exhibiting much ingenuity in metonymising the Hebrew names. The following might be a couplet from the Iliad:

Σήνα κρατερόφρον' Ἀμορῥαίων βασιλῆα,
Καὶ Βασάνοιο μίδοντα, πελώριον ὄβριμον Ὤγον.

The reader of Aristophanes will remember how readily the Greek language lends itself to the manufacture of humorous compound terms. Modern Greek is equally adapted to the same purpose. A translation of Bunyan's Pilgrim's Progress, published at Athens in 1854, renders the names given to the characters in that book, very well. Turnabout is Eumetabolos: Smoothman, Glucologos: Mr. Anything, Alloprosallos: Mr. Vain-confidence, Mettaiotharrhes: Giant Slaygood, Agathoctonos: Dare-not-lie, Phugopseudes: Standfast, Eustathes: Madam Bubble, Pampholux: Father Honest, Gero-Timios. This last epithet reminds one of the modern Greek term 'caloyer,' which possibly may have perplexed readers of Childe Harold. It is the modern Greek Kalo-ger, pronounced -yer, Kalos gerôn, 'the good old man,' 'the good father': the word occurs in connection with a description of the monastery of Zitza in Albania:

"The convent's white walls glisten fair on high:
Here dwells the calo-yer, nor rude is he,
Nor niggard of his cheer."

CH. HAR. ii. 49.

SIR WILLIAM HAMILTON'S PHILOSOPHY: AN EXPOSITION AND CRITICISM.

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ARTICLE IV.—*Criticism of Hamilton's System, Continued.*

The last article of this series was occupied with the criticism of Hamilton's doctrine of consciousness, which may be regarded in the light of an introduction to his whole system of philosophy. The next subject, which I propose to discuss, is the doctrine of External Perception, inasmuch as it seems to me to involve a greater number of the most important principles of his philosophy than any other doctrine.

Referring for the details of his theory of perception to the exposition of his system in the second article of this series, I think it necessary here merely to recall the general position, which he endeavours to defend and explain, that man has an intuition or immediate knowledge of a nonego or matter as existing in space. That we possess such an immediate knowledge, he maintains, is the natural or unbiassed testimony of human consciousness; and accordingly he names his own system *Natural Realism*. On the other hand, those who deny such an immediate knowledge of matter, but still maintain that matter really exists, are obliged to explain by various hypotheses our belief in its reality; and these philosophers he accordingly proposes to name *Hypothetical Realists*. The system of Hypothetical Realism is that which has found most general favour among philosophers, and it is that which Hamilton has set himself specially to overthrow. The present article will be devoted mainly to the criticism of his polemic against this system.

(A.) The first point, which demands attention in connection with this subject, is Hamilton's appeal to the natural testimony of human consciousness as being in favour of his position, that man has an intuitive knowledge of an extended nonego. That such is the natural testimony of our consciousness, he does not assert merely on his own authority, but he maintains to be proved by the admissions even of those philosophers who refuse to acknowledge the trustworthiness of the testimony.

I. At the outset of this discussion, therefore, it is necessary to consider Hamilton's citation of his opponents as admitting the fact of consciousness to which he appeals. A number of the most explicit statements conveying this admission are quoted in his Dissertation on the Philosophy of Common Sense, pp. 747–8,* and among these are to be found passages from the writings of Descartes, Berkeley, Hume, Schelling, Malebranche, Fichte, as well as of other philosophers. In a passage in one of his lectures (Vol. I., pp. 289-92), where the same subject is discussed, Hamilton selects from these statements those of Berkeley and Hume; and we must therefore suppose that, at least when he wrote his lectures, these two quotations seemed to him the most suitable for his purpose. Yet it is impossible to avoid serious misgivings as to the propriety of citing either of those two philosophers as admitting the fact of the natural belief of mankind in the reality of the things which they perceive through the senses, while denying the authority of that belief. The quotation from Hume, indeed, is, perhaps, less exceptionable than the other, but does not admit, when correctly interpreted, of being applied to the purpose for which it is adduced by Hamilton; but certainly there is no mode in which it is possible to justify his quotation from Berkeley. The passage quoted runs as follows: "I do not pretend to be a setter up of *new notions*. My endeavours tend only to unite and place in a clearer light that truth, which was before shared between the vulgar and the philosophers: the former being of opinion, that *those things they immediately perceive are the real things:* and the latter, that *the things immediately perceived are ideas which exist only in the mind.* Which two notions put together, do, in effect, constitute the substance of what I advance." Now, even though Hamilton may not have comprehended the main drift of Berkeley's philosophy, the above passage might have taught him that there is no sense in which his opponent could fairly be represented as rejecting the natural testimony of consciousness to our immediate perception of a material reality. On the contrary, that is a testimony to which, as Sir William Hamilton himself admits,† Berkeley may rightfully appeal, and actually "did appeal more confidently, perhaps more logically, than Reid." Indeed, whatever judgment may be given as to the truth of Berkeley's system, an impartial criticism cannot refrain from deciding that

* See also *Discussions*, p. 92, note. † Reid's Works, p. 817, note.

presents stronger claims to the name of Natural Realism than can be urged in favour of Hamilton's. For (1) while the former attributes reality, in the sense in which he understands the term, to all sensible objects, the secondary as well as the primary qualities of matter indifferently, the latter limits our perception of reality to the primary qualities, though there cannot be a doubt that the natural instinct of mankind, unchecked by scientific reflection, is to believe, when a rose is before the eyes, that its color is not less real than its figure. Moreover (2) while the gist of Berkeley's arguments is to prove that there is no unperceived reality underlying the objects of perception, Hamilton, in a measure, destroys the realistic aspect of his system by restoring, in his doctrine of the Conditioned, the unknown material substance which his opponent relegates to the category of unfounded hypotheses, contradicted by the natural convictions of mankind. It must thus (3) be evident further, and it will appear more fully in the sequel, that we are left in irremediable perplexity as to what Hamilton meant by *reality* in consequence of his recognising realities underlying those which are the immediate objects of perception, whereas the reality which Berkeley attributes to these objects, and which, he believes, is also attributed to them by the vulgar, has always a specific signification. But whatever may be thought of these remarks on the comparative claims of the Hamiltonian and Berkeleyan philosophies to be regarded as systems of Realism, it does not admit of doubt that Berkeley can, in no fair view of his system, be represented as rejecting the admitted belief of the human mind as the reality of the things perceived through the senses. The utmost that can be said is, that his understanding of what is meant by reality differs from Hamilton's; but a different interpretation is very far from a total denial of the reality attributed to material things.

The evidence wrung from Berkeley in favour of his Scottish opponent's assertion is thus found to break down under examination; and when we look into Hume's evidence, we find that it can scarcely stand such a test any better. The passage quoted, it must be remembered, occurs in the Essay on the Sceptical or Academical Philosophy; and the statements cited are written from the Sceptical point of view, asserting nothing dogmatically either for or against our natural beliefs, but merely poising against each other antagonistic conclusions of the human mind, so as to exhibit the instability of all purely speculative results. In the passage adduced by Hamilton the equipoise instituted

is between the natural belief of mankind in the reality of the phenomena presented in perception and the philosophical doctrine which attributes reality only to an unperceived substance underlying these phenomena. Now, although Sir William Hamilton does maintain the immediate objects of perception to be in some sense real, yet there is another sense in which he persistently refuses to predicate real existence of anything but the unknown substratum of phenomena, for which, in the passage under consideration, Hume asserts that there is no proof. The sceptic therefore cannot be said to reject the above natural belief of men in any important sense in which it is not also rejected by his opponent; and consequently his evidence cannot be admitted in the case in which it is adduced.

It may, however, be allowed that Hume's positive doctrine is founded on a rejection of this natural belief, which he yet acknowledges to exist. The belief, to which Hamilton appeals, must be an original belief of the human mind; and he admits that his reasoning would be invalidated by disproving the originality of the belief.* Now, this is precisely what Hume endeavours to disprove. The belief of men, the existence of which he acknowledges, is one which he holds to be acquired; and, as already mentioned in the first article of this series, he employs an elaborate chapter in the *Treatise of Human Nature* in tracing its genesis. There is thus an additional ground on which it is impossible to accept Hume's evidence as testimony to the existence of the belief, to which Hamilton appeals; and it is the more remarkable that Hamilton did not see this, as one of the passages, to which he refers in this connection, seems to be in the chapter of Hume's *Treatise*, which endeavours to explain the origin of the belief.

The remaining testimonies, it is to be feared, will all evaporate likewise before the light of examination. They all admit of being explained as referring to a belief which is either not original or not rejected by the witnesses adduced in any sense in which it is not also rejected by Hamilton in his doctrine of the Conditioned. There is, for example, a brief quotation from the Cartesian De Raei, stating the belief of mankind, "Res ipsas secundum se in sensum incurrere." Can any one be far amiss in saying that Sir William Hamilton is among the philosophers who reject the doctrine that things in themselves (*res ipsae secundum se, Dinge an sich*) enter immediately into

* *Discussions*, p. 92, note.

the sensuous perceptions of the mind? Similarly the quotation from Stiedenroth's *Psychologie* is capable of interpretation on either of the above suppositions, though one would require to be acquainted with the general doctrine of its author to explain with certainty the particular drift of this passage. It is unnecessary to dwell upon those passages to which Sir William Hamilton has referred without quoting them; but one may well ask, though one can scarcely hope to answer, what interpretation, inconsistent with the doctrine of the Conditioned, it is possible to put on the following quotation from Tennemann: "The illusion that things in themselves are cognisable is so natural, that we need not marvel if even philosophers have not been able to emancipate themselves from the prejudice. The common sense of mankind, which remains steadfast within the sphere of experience, recognises no distinction between things in themselves and phenomena; and the philosophising reason commences therewith its attempt to investigate the foundations of this knowledge and to recall itself into system." *

The witnesses, summoned with so much confidence by Sir William Hamilton, might therefore all be allowed to retire, on the ground that their testimony does not bear upon the point which it is adduced to prove, were it not that Sir William's most distinguished antagonist allows the evidence of a certain class of these witnesses. "Those indeed," says Mr. Mill, "who, like Kant, believe that there are elements present, even at the first moment of internal consciousness, which do not exist in the object, but are derived from the mind's own laws, are fairly open to Sir W. Hamilton's criticism. . . . . But, as regards all existing schools of thought not descended from Kant, Sir W. Hamilton's accusation is without ground." † One cannot but feel at a loss in dealing with an assertion of this kind, not illustrated by any explanation, or supported by any defence; but the authority of the philosopher who makes the assertion claims for it some recognition in this connection. Are we then, in deference to this authority, to admit that Hamilton is justified in compelling Kant and his followers at least to give evidence in his favour? I am obliged to acknowledge that I have altogether misinterpreted the drift of Kant's philosophy, if Mr. Mill's charge against it is well founded. Undoubtedly Kant holds that, even in our earliest perceptions, the relations of space and time, under

* Examination of Sir W. Hamilton's Philosophy, pp. 160–1.

† Quoted in *Discussions*, p. 92, note.

which objects are perceived, as well as the categories of the understanding, under which they are thought, are derived not from the objects, but from the mind's own laws. Mr. Mill also holds that these elements in our knowledge of objects are derived from the mind's own laws, and are not furnished by the objects themselves. The only difference between his doctrine and Kant's is in reference to the time at which these elements make their appearance in consciousness, the former maintaining, in opposition to the latter, that they are produced, not at once, but only after a more or less gradual process of association, although of course that process must have been accomplished before the period at which memory begins, and consequently at a period not very much later than that which is supposed in the theory of Kant. It is therefore an essential point in Mr. Mill's doctrine regarding our knowledge of matter, that the illusion of the externality, under which material things appear to us, is generated inevitably in accordance with the laws by which sensations and other mental states become associated; and that this illusion, from the date of our earliest reminiscences, is so irresistible, that it can be dispelled only by the conclusions of psychological enquiry—conclusions which are still so inadequately established, that they are rejected by a large number of those who are engaged in such inquiry. I do not on this account lay to the charge of Mr. Mill's doctrine, that it exhibits, as Hamilton is fond of saying, "our Maker as a deceiver, and the root of our nature as a lie." It is competent for any one to maintain, and every scientific man does maintain, that there are illusions which the human mind naturally and inevitably creates, which it is the function of science to remove. But as this plea may be urged by Mr. Mill, it may with equal right be urged by the disciple of Kant. It matters not whether the mental forces, which give birth to the illusions destroyed by science, operate so slowly as to produce their results only after a comparatively long process, or so swiftly that their results emerge on the first outburst of mental activity. If indeed it were maintained by Kant that the human mind is so constituted as to be incapable of exposing the illusions to which it is naturally subject, his doctrine might be held liable to the accusation which Sir William Hamilton brings against it, and in which Mr. Mill joins But the creator of the modern German philosophy has not marred his system by such a flaw. If he holds that the mental faculties, from the very commencement of their exercise, originate illusory appearances, he holds quite as unequivocally that these faculties are themselves competent to

discover the illusory character of such appearances by a scientific criticism of the elements which constitute human knowledge.

What, then, must we suppose, led Sir W. Hamilton to imagine that the statements of antagonistic philosophers, which we have now examined, are to be interpreted as admissions in his favour? A solution of this question will probably be reached by examining the nature of the belief to which these statements refer, and by considering the manner in which that belief ought to be treated by the scientific student of the human mind.

II. There cannot be a doubt that a belief, conviction, intuition, knowledge, consciousness, or whatever else one may choose to call it, of something external to, or different from, one*self*, must be acknowledged to exist in the mind of every man. That in all my consciousness I am aware of that which is not I, apprehended as occupying space and as enduring in time, and that I cannot choose but be aware of it except by ceasing to be conscious,—this statement will be admitted by every human being to be the expression of a fact in his consciousness from the date of his most distant reminiscences down to the latest hour at which reflection is possible. Though it may be generally true, as Sir W. Hamilton more than once asserts after Varro, that there is no absurdity too great not to have found a supporter among any of the philosophers, I am confident that a special exception must be made in reference to the denial of this mental fact. At least it would have been interesting if Sir W. Hamilton, instead of collecting acknowledgments of this fact, had employed some of that curious learning, which has endeavoured to discover the "local habitation and the name" of the philosophical sect of Egoists, in hunting out any philosophers by whom the fact has been denied. The truth is, that this is not only one of the facts which the investigator of the human mind must study, but, when properly viewed, it is, as the most obtrusive fact in our mental history, also the prime fact in mental science, the explanation of which inevitably drags in all the general questions suggested by the phenomena of human knowledge. On this account the fact under consideration necessarily occupies the most prominent place in the speculations of schools representing the most antagonistic tendencies of philosophical inquiry; and there are not wanting, in the writings of philosophers, most opposed to Sir W. Hamilton in their interpretation of the fact, statements, quite as explicit as any which he has penned, of the irresistibility and the immediacy with which in our ordinary consciousness

the intuition of an external objects makes its appearance. Could the Scottish philosopher desire, or could we find in his works, a clearer or more forcible expression of this intuition than is given in a passage from one of Schelling's earlier writings,—a passage, which, if I have traced his reference correctly, is among those referred to, without being quoted, by Hamilton? "I believe, no one will lightly deny that all trustworthiness of our knowledge rests on the *immediateness* of intuition. The philosophers of the highest genius speak of the knowledge of outward things as of a revelation which happens to us, not as if by that means they meant to explain anything, but to indicate, that it is in general impossible to bring about the connection between an object and its apprehension (Vorstellung) by means of intelligible conceptions. They name our conviction with regard to outward things a *belief*, either because the soul communicates most immediately with that which it believes, or, to express it in a word, because that conviction is a truly blind assurance, which does not rest on inferences (from cause to effect) or on proofs of any kind. Moreover one cannot see, how any opinion, which is produced only by means of arguments, can pass into the soul, can become the ruling principle of action and of life in such a manner as the belief in an external world. Whence comes this element of immediateness, and of insuperable certainty arising from immediateness, in our knowledge?" *

This mental phenomenon then being one, whose existence is admitted by Sir W. Hamilton's opponents as distinctly as by himself, it is evident that they did not consider such admission to be out of harmony with their theories of perception; and the impartial critic will, I am persuaded, agree with their opinion. It is necessary therefore to point out the misapprehension which led Sir W. Hamilton to suppose that such an admission is irreconcilable with any theory but his own. One source of this erroneous impression has already been explained in treating of his doctrine regarding the authority of consciousness as the ultimate standard of appeal. It was then shown that he has failed to discriminate the general fact, that in an act of perception I am conscious, and the special fact, that in an act of perception I am conscious of an individual object. The former of these it would be the climax not of scepticism, but of madness, to question. It is easy enough moreover to state in

* See Schelling's *Abhandlungen zur Erläuterung des Idealismus der Wissenschaftslehre*, III.

popular language, which is satisfied with describing the superficial appearance of things, but it is far from easy to define with scientific exactness, the object of which I am conscious in an act of external perception. Let it however be supposed that this is not so difficult as it is in reality, we are still far from having determined with precision, what the testimony of consciousness is in such an act; and we are thus brought to a second source of the error into which Hamilton has fallen.

We may suppose that every necessary precaution has been taken to discover and to describe exactly the phenomenon of consciousness which we are now discussing, and that, after the labours of numerous observers and writers have been employed on it, we are now in a position to declare a certain statement universally accepted. It will, I believe, be acknowledged by all, though not perhaps in the very same terms, that external perception is an apprehension of something which appears at least to be different from the perceiving mind, as well as to be existent in time and in space; and that this apprehension bears from the very first so strong an appearance of immediateness, that it is taken by the unreflective mind to be from the very first really immediate. Sir W. Hamilton's theory is, that the testimony of consciousness is thus committed to the doctrine of the *real* or *original* immediacy of external perception, and that consequently the denial of this doctrine necessarily involves the rejection of that testimony. Now, in citing the authority of consciousness as in favour of any theory, there are certain laws by which Sir W. Hamilton taught his pupils to be guided. One of these, which he names the Law of Parsimony, enjoins "that nothing be assumed as a fact of consciousness but what is ultimate and simple." In explaining this law he asks,* "What is a fact of consciousness? . . . . In the first place, every mental phenomenon may be called a fact of consciousness. But as we distinguish consciousness from the special faculties, though these are all only modifications of consciousness—only branches of which consciousness is the trunk, so we distinguish the special and derivative phenomena of the mind from those that are primary and universal, and give to the latter the name of *facts of consciousness*, as more eminently worthy of that appellation. In an act of perception, for example, I distinguish the pen I hold in my hand, and my hand itself, from the mind perceiving them. This distinction is a particular fact—the fact of a particular faculty, perception. But

* *Lec. on Metaph.*, vol. I., p. 260. See also *Reid's Works*, pp. 749–50.

there is a general fact, a general distinction, of which this is only a special case. This general fact is the distinction of the Ego and the non-Ego, and it belongs to consciousness as the general faculty. Whenever, therefore, in our analysis of intellectual phenomena, we arrive at an element which we cannot reduce to a generalisation from experience, but which lies at the root of all experience, and which we cannot therefore resolve into any higher principle,—this we properly call a fact of consciousness." We have here, then, a distinct statement of a rule by which we are restricted in appealing to the testimony of consciousness. The veracity of this testimony must not be supposed to be involved in the truth of the mental judgment contained in *any* phenomenon of consciousness. It is only when, after analysis, we have reached those facts which do not themselves admit of decomposition, that we are in a position to declare the veracity of our natural beliefs at stake, and on that ground to cite their authority. We may indeed make a narrower restriction, which would undoubtedly be admitted by Hamilton, that we are at liberty to cite the authority of consciousness only when, by means of the process which is more correctly called criticism than analysis, we have discovered those facts which have not merely resisted all attempts at decomposition hitherto, but must, from their characteristic attributes, be declared incapable of being decomposed. Now, it may safely be said that no one, who is inspired by an earnest love of science, will hesitate to support Sir W. Hamilton in maintaining the unimpeachable veracity of such ultimate facts of consciousness, and the legitimacy of citing their evidence as an authority from which there is no appeal; but in order to render the citation of this authority valid in any particalar controversy, it must, on Sir William's own showing, be first of all made out, that the fact adduced is truly ultimate and simple. In the present case, therefore, it is not enough to have determined with scientific precision the object of which we are conscious when consciousness has been developed into an act of external perception; it is absolutely requisite to show that the differentiation of ego and nonego and the recognition of the nonego as occupying space have not been, and cannot have been, an evolution from simpler facts.

Now, it will be found that Sir William Hamilton does adduce reasons, which must be acknowledged to be, if not perfectly conclusive, at least very forcible, to prove the ultimate character of the essential facts which are implied in external perception; and these reasons will afterwards demand our consideration. At present our

attention is limited to the question whether, in appealing to the authority of consciousness as establishing his theory of perception, he has fulfilled the conditions of his own test for determining the validity of such an appeal. It is evident, then, that, in order to meet the requirements of the prescribed test, his appeal should be made only after the fact appealed to has been shown to be incapable of scientific interpretation except as one of the absolutely final results in the analysis of mental phenomena. From the circumstance that he adduces reasons to prove this with regard to the fact of external perception, he might, at the first glance, be supposed to found his appeal on the conclusiveness of these reasons. Yet a more careful examination will undoubtedly show that this is very far from being the ground on which he bases the validity of his appeal.

In proof of this it might be deemed sufficient to refer the student of Sir William Hamilton's writings to the impression produced by the general style in which he discusses this subject; but it is possible to point out several facts which establish incontrovertibly the above assertion.

1. It is important in this connection to notice, in the first place, the discussion, to which the twenty-fifth of his lectures on Metaphysics is devoted, on the objections to his theory of perception. That discussion is limited to two points, which he considers his opponents bound to establish in order to a successful polemic against his theory. He thinks that they were bound in the first place to adduce reasons sufficient to justify their rejection of the testimony of consciousness to our immediate knowledge of the nonego, and in the next place to substitute a legitimate hypothesis in room of the rejected fact. It is evident, from this account of its drift, that his discussion starts with assuming the original immediacy of perception; and accordingly when we proceed to his criticism of the objections to his doctrine, we do not meet with the slightest expression of even a surmise, that the "testimony" of consciousness under consideration might be rejected by some on the ground that perception can be explained by acknowledged psychological laws as a development from more elementary facts.

2. It is further evident, that Sir W. Hamilton did not found his appeal to the veracity of consciousness in the present instance on the proved impossibility of analysing the phenomenon of perception, from his citation of the admissions made by his opponents. These admissions have been considered already, and it has been seen that they amount to

no more than a statement of the fact of perception as it appears in the consciousness of every man. Sir W. Hamilton, however, mistakes this statement for a concession of the very point at issue between him and the great majority of his antagonists, and it is on the ground of such a mistaken concession that he declares the testimony of consciousness to be in favour of his theory.

3. But the most conclusive evidence that Sir W. Hamilton has in the present instance forgotten the conditions which make an appeal to the testimony of consciousness valid, is the fact that he makes such an appeal at all. For such an appeal is altogether needless, if the condition under which alone it may be made is fulfilled. To make the appeal allowable, the fact appealed to must be shown to be an absolutely elementary fact in human consciousness; and when this is done with regard to perception, the whole question at issue between the Natural Realists and their opponents is set at rest. It is wholly unnecessary to plead the veracity of the primitive beliefs, out of which the phenomena of human consciousness have been generated; for the controversy, raised by the opposition to Natural Realism, is not, whether it is legitimate to set aside any of these beliefs, but whether the conviction, involved in external perception, is to be reckoned in the number of such beliefs at all.

To appreciate Sir W. Hamilton's position fully, however, we must consider this question in the state in which he took it up. It had from the first been urged against the philosophy of Common Sense, that it is only a retreat from unpalatable conclusions of science to the unscrutinised beliefs of mankind; and Sir W. Hamilton, referring to this charge, acknowledges that it comes home to some philosophers of the Common Sense school. "In this country in particular," he says,* "some of those who opposed it (the argument of Common Sense) to the sceptical conclusions of Hume did not sufficiently counteract the notion which the name might naturally suggest; they did not emphatically proclaim that it was no appeal to the undeveloped beliefs of the unreflective many; and they did not inculcate that it presupposed a critical examination of these beliefs by the philosophers themselves. On the contrary, their language and procedure might even sometimes warrant an opposite conclusion." It cannot therefore be pleaded in Sir William Hamilton's favour, that the rock, on which he has struck, is one whose

* *Reid's Works*, p. 752.

dangers have been made apparent only by researches subsequent to his own. It is a rock on which, we have just seen, he acknowledges that some previous investigators of his own school had been shipwrecked; and it is consequently difficult to see how he should have run upon it so directly himself. There is room enough for conjecturing what can have led him into a course, against which he has uttered such unequivocal warnings; it is possible that the true cause is to be found in what may be regarded as one of the great misfortunes—perhaps Ferrier was right in regarding it as "the one mistake," *—of his philosophical life, that he should have dedicated his powers to the service of the Common Sense school as represented by its most characteristic exponent, Dr. Reid. Whether external perception be a primitive intuition of the human mind or not, it was idle to refer to the ordinary and irresistible convictions of mankind except to discover the fact which it is the office of mental science to explain. To refer to these convictions, as if they superseded all the recognized processes of science, was to foreclose the very inquiries, which constitute the science of mind, into the nature and the origin of mental phenomena. Sir W. Hamilton, therefore, by accepting this philosophy as the highest effort of speculation, unfortunately bound himself to shape his theory of perception into harmony with it, and was accordingly forced to disallow the question with which the above quotation from Schelling concludes, "Whence comes this element of immediateness and of insuperable certainty in our knowledge?" To him our knowledge of external things *is* immediate; we know, and have a right to ask, nothing beyond that fact. If the argument from common sense be, as is maintained by Hamilton, merely a reference to the ultimate and simple facts of human consciousness, then the Common Sense school is indistinguishable from other schools of speculation; for there is no philosophy which does not professedly seek to discover by what smallest number of ultimate and inexplicable facts the phenomena of the universe may be explained, or which dreams of denying these facts after they have been discovered. But when any circle of inquirers distinguish themselves by their habit of appealing to common sense, it is difficult to understand for what purpose such an appeal can be habitually made, unless it be to array the unscientific opinions that are universally current among men against speculative conclusions which cannot be rebutted by the recognized methods of

* Ferrier's *Lectures and Philosophical Remains*, vol. I., p. 489.

science. The ordinary opinions of men will always oppose obstacles enough to the progress of scientific thought; and it is unfortunate that Sir W. Hamilton should even have made an appearance of countenancing that kind of opposition to the advancement of the science, in whose service few lives have been so faithfully spent. Still it is due to him to remember that the mistake he has made is in diametrical opposition to general principles of investigation which he has himself prescribed.

Reviewing our discussion of the belief or conviction revealed in the perception of external things, we see that it is but one of the phenomena of the human mind which it is the office of mental science to study, and that therefore we should abandon science in favour of ordinary unscientific opinion, were we to foreclose at once all inquiry into the origin and composition of this belief by merely pleading that in the consciousness of all men it appears as a simple and ultimate fact. We have now, therefore, the way cleared for this inquiry, and for an examination of Sir W. Hamilton's contributions to its settlement.

(B). In proceeding then to consider whether any scientific explanation can be given of perception, except by regarding it as one of the elements of which human consciousness is built up, it is necessary to eliminate from the phenomenon all that is non-essential. Now, it will certainly be admitted by all that, in order to an act of perception, there must be something perceived, and perceived as something different from the perceiver. This is the highest generalization under which the objects of knowledge can be ranged; for in all knowledge there must be a knower and that which is known. But the object of external perception is, moreover, always perceived as *here* or *there*, as extending from this point to that in various directions, as, it may be, moving from this position to that; in other words, it is always perceived as *existing in space*. I do not deny that it may be proved on scientific grounds legitimate to use the word *perception* for acts of knowledge, in which the object is known not under the relations of space; as, for example, to speak of perceiving the smell or the taste of an apple, the heat of a fire or the sting of a bee; but it will be allowed by all who understand the question we are now encountering, that it is advisable, till this question is settled, to apply the term in a stricter sense, only to those knowledges of which the object is perceived as occupying space. The objects of perception must also be perceived as existing in time, but this is a condition to which the objects of all consciousness are restricted. Still further, the objects of perception are perceived as offer-

ing a resistance to the voluntary activity of the perceiver. Besides these four facts I know of no other constituent element of perception.

In strictness, therefore, there are only two facts essential, and at the same time peculiar to the mental phenomenon of sense=perception; these are the facts, that the objects of perception are perceived as exist, in space, and as resisting our voluntary exertion. The perception of space and the perception of resistance present, consequently, a primary claim to consideration. But the more general aspect of perception, in which its objects are presented as different from the perceiver, is usually discussed along with the others, and it is so by Hamilton, who commonly describes perception, in its most essential form, simply as an immediate knowledge of the nonego or not-self. It will, therefore, probably be found advantageous, at least in the present criticism, to follow the order thus pointed out, and commence our discussion with this aspect of the phenomenon under investigation.

I. It is unfortunately necessary, at the outset of this discussion, to insist most explicitly on a strict adherence to the precise meaning of the term *nonego* or *notself*. Clearly these words express nothing but the object of knowledge considered as different from the knower. If the object of knowledge admits of more specific determination, this is not implied in the designation of it as nonego. The special inquiry, therefore, to which we are limited at present, seeks to discover merely how the ego becomes conscious of the nonego, how *I* become conscious of *that which is not I*. Now, evidently, the consciousness of that which is not myself becomes possible only in contrast with the consciousness of myself, as the consciousness of self can emerge only in the simultaneous consciousness of notself. The inquiry, therefore, into the origin of our consciousness of the nonego reduces itself to the question, what originates in every human consciousness the antithesis of me and that which is not I?

Evident though these statements seem to be, the looseness with which the correlative terms *ego* and *nonego* are used, shows that it is far from being unnecessary to direct attention to the facts stated. The most celebrated philosophical work, published within recent years, is undoubtedly the *Examination of Sir W. Hamilton's Philosophy* by Mr. Mill; yet, in a chapter of that work entitled "The Psychological Theory of the belief in matter, how far applicable to mind," there occur the following observations:* "Although these two elements, an ego

* See p. 204, 1st edition.

and a nonego, are in our consciousness now, and are, or seem to be, inseparable from it, there is no reason for believing that the latter of them, the nonego, was in consciousness from the beginning; since, even if it was not, we can perceive a way in which it not only might, but must have grown up . . . . I now propose to carry the inquiry a step further, and to examine whether the ego, as a deliverance of consciousness, stands on any firmer ground than the nonego; whether, at the first moment of our experience, we already have in our consciousness the conception of self as a permanent existence; or whether it is formed subsequently, and admits of a similar analysis to that which we have found that the notion of notself is susceptible of." Obviously it is here taken for granted that the consciousness of self may possibly be an original factor of the human consciousness, even though the consciousness of the notself arise only after a more or less prolonged process. In the sense in which nonego and notself are used by Mr. Mill, and which may be vindicated by a prevalent usage, this assumption may be perfectly justifiable; for, though it is impossible to discover the self and the notself in our consciousness, using these terms in their most general, which is also their etymological, signification, yet it is possible that the self may appear in consciousness before a certain special form of the notself, before that special form which is distinguished by the characteristic of extension, and which we name *matter*. It is extremely natural that matter should thus be identified, in ordinary philosophical language, with the nonego. There is no commoner figure of speech than that in which a characteristic belonging to the most prominent part of any whole is taken to denominate the whole itself; and the most numerous, certainly the most obtrusive, portion of the nonegos presented in consciousness is made up of material things, that is, of things existing in space. It not to be overlooked, moreover, that there may be sound philosophical reasons for using the word *matter* to designate the nonego in general, or in other words for describing objects known as constituting the matter of knowledge; for it may prove to be a result of mental inquiries, that all objects, that the whole matter of knowledge is formed by projecting our own mental states and thus making them things that may be contemplated by us as different from ourselves. But it must not be overlooked, that the question in debate with regard to external perception concerns those nonegos which are presented to the ego under the conditions of space; and the qualities which are usually regarded as essential to matter, and which are accord-

ingly denominated primary all hinge upon these conditions. It is therefore of the utmost importance to discriminate precisely and constantly all questions in reference to our consciousness of the nonego in general from those concerning the special group of nonegos distinguished by the attribute of extension.

As we have found, in the most celebrated criticism of Hamilton, the absence of any discrimination between these two classes of questions, it will not surprise us to come upon the same confusion in his own writings. This want of precision could be adequately illustrated only by an extensive examination of his works; but one or two passages expose with special clearness the inexact use which he makes of the terms ego and nonego with their equivalents. "It may appear," says he, for example, in Note D* appended to Reid's Works, "not a paradox merely, but a contradiction, to say, that the organism is, at once, within and without the mind; is, at once, subjective and objective; is, at once, Ego and Nonego. But so it is; and so we must admit it to be, unless, on the one hand, as Materialists, we identify mind with matter, or, on the other, as Idealists, we identify matter with mind. The organism, as animated, as sentient, is necessarily ours; its affections are only felt as affections of the indivisible Ego. In this respect, and to this extent, our organs are not external to ourselves." * In order to avoid the conclusion, that this quotation contains "not a paradox merely, but a contradiction," it is evidently necessary to understand by Ego something more than is expressed by the first personal pronoun,—to understand not *me* simply, but everything else that may be viewed as having a certain relation to me. More pertinent to the subject in hand is Sir W. Hamilton's constant identification of the nonego with matter. "When I concentrate my attention in the simplest

* *Reid's Works*, p. 886, note *. Compare p. 858, note*. It is curious to come upon the same observation in Locke's *Essay:* "Self is that conscious thinking thing, whatever substance made up of (whether spiritual or material, simple or compounded, it matters not), which is sensible, or conscious of pleasure or pain, capable of happiness or misery, and so is concerned for itself, as far as that consciousness extends. Thus every one finds, that whilst comprehended under that consciousness, the little finger is as much a part of himself as what is most so. Upon separation of this little finger, should this consciousness go along with the little finger and leave the rest of the body, it is evident the little finger would be the person, the same person; and self then would have nothing to do with the rest of the body" (Book II., chap. 27, § 17).

act of perception," he says,* "I return from my observation with the most irresistible conviction of two facts, or rather two branches of the same fact;—that I am,—and that something different from me exists. In this act I am conscious of myself as the perceiving subject, and of *an external reality* as the object perceived." Then a few pages further on, "The ego and nonego,—mind and matter, are not only given together, but in absolute coequality." †

These passages are cited not for the purpose of bringing home to Sir W. Hamilton the charge of denuding philosophical terms of their precise signification. Unhappily the intensity of one's regret at the want of precision arises from the fact of its being strongly palliated, if not justified, by very extensive usage. Possibly the inexactness with which the two universal factors of knowledge are spoken of in English, may arise from the unfortunate difficulty of finding for the knower a term which expresses clearly and exclusively the first person. I believe, it would be found advantageous if we could conveniently use for this purpose the first personal pronoun alone; for when we substitute such words as *mind*, *soul* or *spirit*, or even terms like *the self*, or *the ego;* in fact, when we use *I* or *me* themselves as substantives with the definite article, we require a constant reminder to prevent ourselves from attaching to our language more than the pure self-consciousness. An advance, however, has been made towards clearness on this subject by the adoption of such terms as *the self*, *the ego*, &c., instead of the substantives, *mind* and *soul*. Though expressions like *the self*, *le moi* and even *the I* may be met with in some of the older English and French authors,‡ yet their introduction into general philosophical literature may be traced to the influence of the modern German philosophy, and is perhaps with justice ascribed by Krug ‖ specially to Fichte's *Wissenschaftslehre*. We are thus placed into a more favourable position for appreciating the problem regarding the origin of self-consciousness, understanding by the self simply what we mean when we use the words *I* and *me*, and neither consciously nor inadvertently inserting into our meaning anything such as a nervous system, an organic body, or a spiritual substance,

* *Lectures on Metaphysics*, Vol. I., p. 288. † *Ibid.*, p. 292.

‡ See Locke's *Essay*, Book II., c. 27, §§ 9 & 20; Pascal's *Pensées*, Art. V., § 18.

‖ In his *Philosophisches Lexicon*, under the word *Ich*. Cardinal Wiseman traces the prevalence of trancendental philosophy among the Germans to the fact, that their first personal pronoun admits easily of being converted into a substantive. (See Renan's *De l'origine de langage*, p. 190, note.)

that it is not identical with the self, however intimately associated with it it may be.

What interpretation then is mental science to adopt of self-consciousness? Is it to be regarded as a fact which is required for the explanation of all the other phenomena of consciousness, but which is itself incapable of being explained? Or can it be explained as a development from the recognized laws of a consciousness in which the distinction of self and notself has not yet made its appearance? We have to consider what Sir W. Hamilton has done towards the solution of this problem. By referring to my previous article in the last number of this journal,* it will be found that his doctrine on this subject has been discussed at considerable length in connection with his analysis of consciousness. From that discussion it appears that he certainly maintains the self to be an essential factor of consciousness, consciousness being described as a relation between the self and its modifications, in which the former recognizes the latter. It is also proved, however, from the drift of Hamilton's doctrine of the Conditioned, that he does not regard the self as, in the act of consciousness, recognised by itself along with its modifications, the belief in it being merely a subjective necessity arising from the impotence of thought. The objections to this doctrine need not be here reproduced; but it is not out of place to notice the attempts, which have been made since Hamilton's time, at a settlement of the question in dispute. We are especially called upon to notice the recent discussion of the subject by Mr. Mill. From repeated examination of the chapter in his work on Hamilton, which is devoted to this discussion, and to which reference has already been made, I have drawn only a deepened impression of the extreme fairness with which the difficulties of the problems discussed are appreciated and stated, even when apparently in most violent collision with the author's general psychological principles; and it raises some hope of progress in the science of mind, when the separate problems, presented by mental phonomena, are dealt with in view of their own difficulties, rather than for the purpose of working out a general theory of psychology into all its details. At the same time there are formidable obstacles in the way of accepting Mr. Mill's discussion as at all commensurate with the requirements of the phenomenon.

It has been already pointed out that Mr. Mill has raised a serious

* See pp. 372–8.

hindrance to his success by his inexact use of the terms, ego and non-ego. We are not surprised, therefore, to find him so far astray as to assert that we know nothing of the mind except as a series or succession of feelings, although he acknowledges that "our notion" of mind involves in it the conception of something that remains unchanged amid the changes of feeling through which alone we know it; and this conception, he thinks, may arise from the same laws as the equivalent conception in our notion of matter. His words are,* "We have no conception of mind itself, as distinguished from its conscious manifestations. We neither know nor can imagine it, except as represented by the succession of manifold feelings which metaphysicians call by the name of states or modifications of mind. It is nevertheless true that our notion of mind, as well as of matter, is the notion of a permanent something, contrasted with the perpetual flux of the sensations and other feelings or mental states which we refer to it; a something which we figure as remaining the same, while the particular feelings through which it reveals its existence, change. The attribute of Permanence, supposing that there were nothing else to be considered, would admit of the same explanation when predicated of mind, as of matter. The belief I entertain that my mind exists, when it is not feeling, nor thinking, nor conscious of its own existence, resolves itself into the belief of a Permanent Posssibility of these states. . . . . Thus far, there seems to be no hindrance to our regarding mind as nothing but the series of sensations (to which must now be added our internal feelings), as they actually occur, with the addition of infinite possibilities of feeling requiring for their actual realization conditions which may or may not take place, but which as possibilities are always in existence, and many of them present. The Permanent Possibility of feeling, which forms my notion of myself,"—and so on. There is scarcely a point in this statement to which exception must not be taken, if we understand by mind, self or ego simply *me*. So far am I from knowing myself always and only as a series or succession of feelings, that I never know nor can conceive myself as such; and the assertion, that I am a series of feelings, is a contradiction in terms; it is tantamount to the assertion, that I am not I. What I am in reality, is not considered here; but I am never conscious of myself as being what I am represented to be in the above description of Mr. Mill. It is true, Mr. Mill

* *Examination of Sir W. Hamilton's Philosophy*, pp. 205–6.

qualifies his statement by the admission that "our notion of mind is the notion of a permanent something," which we "figure" as remaining the same while our feelings change. But this admission is wholly eviscerated of its import by its explanation. The permanent something, which we name the mind or self, is merely a permanent possibility; and our notion of mind is accordingly explained as being a notion not only of an actual series, but of an infinite (indefinite?) possible series of feelings. Now, I am indeed conscious of myself as permanent and absolutely invariable amid all the changes of which I am conscious; but that very fact excludes the conception of myself as a series, however permanent may be succession of phenomena of which the series is constituted; and such a conception does not become a whit more intelligible or true to the facts by explaining the series as one that is not merely actual, but infinite in its possibilities.

There is indeed a sense in which Mr. Mill's words might be understood, in which they might also be regarded as but an awkward expression of a truth. A feeling, considered as a concrete fact, is but a mind or self existing in a certain state. The description of the mind, therefore, as a succession of feelings, might be regarded as amounting to no more than the assertion, that the mind is the mind in the successive states in which it exists or is capable of existing. One may well be justified in thinking that this could not have been Mr. Mill's meaning, not only because no one is at liberty to reduce any of his statements to such a truism, but because such an interpretation of his language is wholly inconsistent with the drift of his discussion on this subject. Mr. Mill's object is to explain how a series of feelings generate the notion of a permanent something to which they belong. Now, this object implies that he starts from the conception of feelings as phenomena in which there is, as yet, developed no consciousness of a permanent self that feels. Mr. Mill, therefore, in reality forces us back on the question, whether mental phenomena are, in their primitive form, undefined by any consciousness of self, and yet governed by such laws as to originate this consciousness sooner or later in all men.

The affirmative answer to this question, according to Mr. Mill, makes two postulates, (1) that the human mind is capable of expectation, (2) that there are certain laws of association among mental phenomena. To these postulates reference will require to be made again in different connections, and therefore they need only be stated here. It is, however, worth while to notice that there is also postulated, as will appear

from Mr. Mill's own admissions, a power of reminiscence with all that it implies. It must not be forgotten, moreover, that, in explaining the origin of selfconsciousness in accordance with this theory, whatever terms may be used in accommodation to the necessities of human language, the theory supposes that mental phenomena, in their essential and original nature, are not referred to a self or mind. It is of the first importance to urge this precaution; for, whatever may be the primitive state of mental life in man, all language is adapted to the expression of a mental condition in which selfconsciousness is an essential factor, and it is one of the most insuperable difficulties, if not a sheer impossibility in this controversy, to find terms which do not take for granted the very point at issue.

What, then, has Mr. Mill contributed towards analysing the phenomenon of selfconsciousness? His analysis, imperfect as he admits it to be himself, seems to me even more imperfect than he supposes. Confessedly he accounts for nothing in selfconsciousness except the notion of permanence, and it may be granted provisionally that so far his account is satisfactory, as it is needless to raise any dispute on such a point. We shall discover immediately the aspect in which he thinks that his theory fails to explain selfconsciousness, but there is another obtrusive aspect in which it is also unsuccessful. What it attempts to account for is not the consciousness of self at all! It explains, let it be admitted, how the notion of a permanent something grows up in the human consciousness; let it also be admitted that it explains how the notion of a permanent something which is generated by sensations alone becomes differenced in consciousness from that notion of a permanent something which attaches itself to *all* mental states; but how the one notion is drawn to the one pole, while the other rushes to the opposite pole, of an antithesis which runs through all subsequent consciousness, is not explained in any form in which the existence of the antithesis is not already assumed. Given the consciousness of myself, which of course implies the consciousness of that which is not myself, it becomes quite conceivable that I should refer to myself all my mental states, while I connect with something that is not myself, the particular group of phenomena called sensations; but how the consciousness of these two contradictories is in the first instance created, I cannot find that Mr. Mill has made even an attempt to explain. He points out, it is true, but his explanation goes no further than to point out, how certain mental phenomena, namely the sensations, might, by the ac-

knowledged mental forces which produce classification, be grouped together and thus be distinguished as a subordinate species from the whole genus of the mental states. But, waiving altogether the legitimate doubt whether any classification is possible before self-consciousness arises, it is evident that the classification, described by Mr. Mill, not only could not originate the definite antithesis of me and that which is not I, but could not originate any contradictory antithesis whatever. I and that which is not I are, as contradictory, necessarily exclusive of each other; and to suppose that the distinction between a species and its genus could produce the consciousness of two things which are mutually exclusive, is to suppose that a process takes place for the production of this particular effect, which is never known to take place in any other instance. Such a hypothesis, one need not fear to say, will not be defended by the most distinguished exponent of the principles of scientific induction.

This defect in Mr. Mill's analysis of self-consciousness the theory of Professor Bain might be taken as an effort to supplement. With the latter indeed there is none of the diffidence regarding the possibility of analysing self-consciousness, which has been noticed as characterising the discussion of the subject by the former. Adopting a theory of Mr. Lewes' *Physiology of Common Life*, Professor Bain attributes "sensation or feeling, that is, consciousness" to all the nervous ganglia, though of course such a consciousness is explained as being in reality not the consciousness of the animal, of whose organism the ganglia form a part, but the consciousness of as many separate inferior animals as there are ganglia. The process, by which these separate consciousnesses are gathered into one united consciousness, is explained by Professor Bain,* but need not be considered here. It is obvious, however, that, starting from such a doctrine, he must refuse, as he does with perfect explicitness, to recognize self-consciousness as essential to mental life, at least in its rudimentary forms; and he maintains even that the conscious distinction of the self and the notself is unnecessary to knowledge, that a veritable act of knowledge may take place without any one being conscious that he knows. The remarks I quote are in reference to the first proposition in Professor Ferrier's *Institutes of Metaphysics*, that "along with whatever any intelligence knows, it must, as the ground or condition of its knowledge, have some cognizance of

* *The Emotions and the Will*, pp. 600–1, 2nd edition.

itself." "What I dissent from," he says,* "is the placing of *self* in the relationship of a factor or foil in *all* our cognitions. I grant it to the fullest extent in the great cardinal cognition, subject=object, mind *versus* matter, internal and external. I maintain, however, that this is only one of innumerable cognitions of the human mind, although a very commanding one. Moreover, I grant that everything that we know ultimately takes a part in that great comprehensive antithesis, ranging itself with one or the other pole. Still things might have been known although the subject-object distinction had never emerged at all; it being enough for cognition that any sort of contrast should exist. I can know light simply by the transition from it to darkness; light-darkness is a veritable cognition, a genuine stroke of knowledge, even if carried no further. . . . . We might remain for ever at this point, being distinctly aware of a number of qualities without attaining the subject-object cognition. It is true that we do not remain in any such narrow sphere, but carry on our knowledge further and further, until at last every conceivable quality is arrayed round one or other pole of the greatest cognition of all."

The starting point, then, of Professor Bain's theory of the self is obvious. The distinction, of which every knower is conscious, between himself and all that is not himself, is maintained to be merely one, though the most prominent, of the discriminations which arise in human consciousness, discrimination being regarded as the fundamental condition of all knowledge. But how does this, the most general of our discriminations, in the first instance originate? It is in reply to this question that Professor Bain seems to me to be more explicit than Mr. Mill. His theory, briefly stated, is as follows: The germ of the distinction between self and notself is to be found in the difference between our feelings of movement and our sensations. There is a more marked contrast between these two classes of phenomena than between any two classes of sensations. In passing from the putting forth of energy to a sensation we are conscious of a wider transition than in passing from a taste to a smell or from a colour to a sound, and the result is a flash of clearer cognition. We are thus enabled to distinguish sensation as a whole from our feelings of movement as a whole, and our feelings of movement as a whole from sensation as a whole; whereas, if we had no sensation, we could distinguish merely feelings of movement from one

* *The Emotions and the Will*, p. 597, 2nd edition.

another; were we without feelings of movement we could distinguish only different sensations. This is the germ of the distinction between self and not self; to develop it something more is required. This requisite is found in the distinction between impression and idea, between the state of things called the present or actual and the subsequent state of things called the ideal. Actual impressions vary with our movements, and, to be obtained or retained, require that certain movements be performed, so that the actual state comes to be associated with our feelings of movement. In passing to the ideal state, on the other hand, the bodily movements necessary to secure the actual may be dispensed with. There thus arises a contrast very marked, between the actual and the ideal, a contrast such as that of which we are conscious between the reality and the bare imagination, for example, of a feast. This antithesis between the ideal and the actual, between imagination and reality, is expressed in such terms as internal and external, subject and object, self and not-self.*

Here certainly there is no shrinking from the conclusions to which a general theory of mind has led. We feel ourselves in the presence of the same unhesitating and unswerving directness with which Hume advances to his results. It is well for us that Professor Bain has unambiguously proclaimed the ultimate issue of a psychological analysis which professes the strictest adherence to the methods of modern science, even though we may be obliged, since our dreaming and our waking consciousness are made up of the same materials, to accept in their most literal signification the words of Prospero: "*We* are such stuff as dreams are made of." Yet one can scarcely avoid feeling that there are various grounds on which it is impossible to regard the above analysis of self-consciousness as fulfilling the requirements which modern science has taught us to recognise as essential to the scientific establishment of any theory.

It is, in the first place, a circumstance suggestive of doubt, that Professor Bain's analysis is not the analysis adopted even by those psychologists who maintain the possibility of decomposing self-consciousness. It must always remain extremely questionable, whether self-consciousness admits of analysis at all, as long as scarcely two of those who attempt the analysis ever arrive at the same elementary constituents. But, in the second place, an obstacle to the acceptance of such an

* See *The Emotions and the Will*, pp. 593–8, 2nd edition.

analysis is to be found in the want of definiteness as to the condition of mind previous to the birth of self-consciousness. This seems to me to affect peculiarly the theory of Professor Bain, from his very attempt to be more explicit on the subject by means of his doctrine, which ascribes consciousness to all the nerve-centres distributed throughout the nervous system. This phenomenon, which he names consciousness, is distinguished, on the one hand, from that consciousness of which alone there is any recollection, and, on the other hand, from purely nervous action. The only consciousness, over which memory extends, and which can therefore be described, not by hypothesis, but from knowledge, is a consciousness in which the apprehension of self forms an universal factor. Moreover, the usual descriptions of consciousness all assume the presence of this factor; for it is commonly explained as the knowledge which a mind possesses of the states in which it exists. If I eliminate, from any of my conscious states, the knowledge that I am in that state, what is the residuum? Nothing that I can conceive but the current of nerve-force which formed the correlate of the conscious state. But a nervous current is as destitute of all mental characteristics as a current of electricity, a thermal vibration or a sonorous wave. What then is this consciousness, which is neither consciousness, as usually understood, nor yet a purely physical state? It is not enough to say, that it is something, but that what it is, cannot be defined. We must know it at least sufficiently to be able to distinguish it from other things, before we can assert that it is capable of generating the antithetical notions of the self and the not-self.

Finally, the notion, of which Mr. Bain gives an analysis, is not the notion of self. Granting, in accordance with the admission already made in the criticism of Mr. Mill's analysis, that the grouping together of sensations in contrast with feelings of movement, of ideal states in contrast with the actual, could take place before the appearance of self-consciousness, it is a sheer begging of the question to claim for these contrasted groups identity with the two terms of the great antithesis which is now under consideration; for there is in all this no light thrown upon the problem, how ideas and impressions—how feelings of movement and sensations—how, in short, all mental states come to be felt as *mine*,—how "I" become conscious of my*self* as existing in these states. It is only by allowing the element sought to slip imperceptibly into our analysis, that we can discover self-consciousness in the synthesis described by Professor Bain. There is certainly nothing in

any of the elements which he exhibits, nor is there anything in their combination, that should oblige or even authorize us to identify such a combination with that of which we are conscious as our *selves*. We might indeed allow some probability to the above explanation of the manner in which self-consciousness arises, if we supposed that mental, like chemical, combination may produce effects whose properties are entirely different from those possessed by any of the combining elements. Such an hypothesis is not to be discarded without examination; it requires only from psychologists a proof similar to that which is furnished by chemistry. Now, of an immense number of chemical compounds we know the composition with certainty, not only by being able to decompose them into their constituent elements, but also by our ability to reproduce the compounds by a combination of their elements. Even those organic compounds, however, which have not yet been reproduced in the laboratory of the chemist, still exhibit the most satisfactory evidence of their composition; the substances may be placed before the senses, and, under perfectly reliable tests, be shown to yield a definite number of recognisable elements. Can anything like this process be carried out in reference to the self? If it can, it certainly has not yet been done. "I" cannot submit to any psychological reagents which compel me to give up the elementary mental stuff of which "I" am constituted. Every analysis of "me" is wholly hypothetical. Ever present in all human consciousness, "I" am still to science a mystery—an "open secret," and perhaps, from the very openness of the secrecy, a limit to the opening of secrets by man.

It has been mentioned, that Mr. Mill admits a certain imperfection in his analysis of self-consciousness. His admission amounts to this, that, while he professes to explain how the notion of self, *considered solely as the notion of a permanent something*, could arise, yet there is another element in the notion of self, and this element is not involved in the given explanation. "If," he says,* "we speak of the mind as a series of feelings, we are obliged to complete the statement by calling it a series of feelings which is aware of itself as past and future; and we are reduced to the alternative of believing that the mind or ego is something different from any series of feelings or possibilities of them, or of accepting the paradox, that something which *ex hypothesi* is but a series of feelings, can be aware of itself as a series. The truth is,

* *Examination of Sir W. Hamilton's Philosophy*, pp. 212–13.

that we are here face to face with that final inexplicability, at which, as Sir W. Hamilton observes, we inevitably arrive when we reach ultimate facts; and in general, one mode of stating it only appears more incomprehensible than another, because the whole of human language is accommodated to the one, and is so incongruous with the other, that it cannot be expressed in any terms which do not deny its truth. The real stumbling-block is perhaps not in any theory of the fact, but in the fact itself. The true incomprehensibility perhaps is, that something which has ceased, or is not yet in existence, can still be, in a manner, present; that a series of feelings, the infinitely greater part of which is past or future, can be gathered up, as it were, into a single present conception, accompanied by a belief of reality. I think, by far the wisest thing we can do, is to accept the inexplicable fact, without any theory of how it takes place; and when we are obliged to speak of it in terms which assume a theory, to use them with a reservation as to their meaning." To the cautious nature of this statement no exception might be made, were it not that on its purport depends the whole science of mind, and, if it be taken in the full extent of its admissions, the general view of mental phenomena, suggested by what Mr. Mill calls the Association psychology, must be greatly modified. If it be admitted, as it seems to be in the above statement, that in self-consciousness we come upon an absolutely ultimate fact of mind, that is, upon a fact beyond which it is impossible to proceed in the process of scientific explanation;—if the self cannot be decomposed into more elementary facts, and if this indecomposable fact is to be accepted without any theory regarding it, then Mr. Mill's previous limitation of our knowledge of self must be abandoned. It can no longer be said, in the language of Hamilton, that mind is but the name for a connected series of phenomena, or, in the language of Mr. Mill, that we can know or imagine it merely by the succession of its feeling. What I am conscious of when I use the words "I" and "me," is admitted to be incapable of explanation as an aggregation of mental states in accordance with the laws of suggestion. "I" am presented in consciousness with the same clearness and immediacy with which my "feelings" are given; my feelings are in fact "I" under particular conditions. If the consciousness of my mental states is to be regarded as the one intuition, whose certainty is the basis and the starting point of all other certainties, the consciousness of my*self* must be comprehended within that intuition. When we speak, therefore, of the self as an inexplicable fact, we must not sup-

pose that we do not understand what we are conscious of when we think of our *selves*. The secret of the self is an open one; there is nothing which we can apprehend more clearly than the meaning of "I" and "me," when they are used simply to express self-hood. All that is to be understood by the incomprehensibility of the self, is its incapability of decomposition. It is thus to be accepted as one of the elementary facts, of which the mental life of man is constructed; and as it is undoubtedly known not through the external senses, the knowledge of it may appropriately be called an *intellectual intuition*.

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The discussion of the remaining points connected with Sir W. Hamilton's doctrine of perception will occupy a subsequent paper.

THE ECLIPSE AMONG THE HINDOOS.

A writer in *Chambers' Journal* for October states that "European science has as yet produced but little effect upon the superstitious masses of India. Of the many millions who witnessed the eclipse on the 18th of August last, there were comparatively few who did not verily believe that it was caused by the dragon Rahu in his endeavours to swallow up the Lord of Day. And we ourselves, as we watched the eclipse from the flat roof of an Indian house, were struck with the poetical force of the story, when we observed, as it were, "the first bite" taken out of the sun's disc, and gazed with awe at the increasing darkness. It easily appears that the dragons Rahu and Ketu are personifications of the nodes, ascending and descending. The astrologers of Europe seem to have inherited the tradition from their Aryan progenitors, for, strangely enough, the astrological name of the ascending node is *Caput Draconis*, and of the descending, *Cauda Draconis*. In like manner, it may be noted, we, as well as the Greeks and Romans, have inherited the Indian names of the constellations and of the days of the week. * * * "There are many Hindoos," the same writer, nevertheless, in another place, says, "who are even now proving themselves no mean disciples of their European masters. Mr. Pogson, the eminent astronomer, thus writes from Madras, and his is no solitary experience: "The calculations of the eclipse for twelve important and conveniently accessible stations, situated within the limits of the totality, and of its partial phases at Madras, have all been carefully made by C. Ragonatha Acharya, the head native assistant at

the Madras Observatory; and it is simple justice to add, that the very considerable labour he has bestowed upon them was undertaken from pure attachment to science, and was accomplished solely in his leisure hours, without the slightest aid or advice from any one. The information afforded in his tabular results is all that can be required or desired for the prediction of the various phenomena of the eclipse.'" We gather from the same Journal that none of the reports yet received from India, of the total eclipse of the sun in August last, describe a perfect observation, as the monsoon was blowing at the time and clouds covered the sky. At some of the stations, however, there were breaks in the clouds, through which glimpses of the sun and moon were obtained, photographs were taken, and spectoscopic observations. Major Tennant, one of the observers, concludes, from what he saw, that the atmosphere of the sun is mainly of non-luminous or faintly-luminous gas at a short distance from the limb of the sun. And Captain Haig describes the red protuberances as "streaked flames."

NOVEMBER METEORS.

We make the following extract from a communication of Professor Kingston to the Toronto *Globe:*

The total number during the night just completed will be found to have exceeded that of November 13th and 14th, 1867. With the exception of about one per cent., the courses of the meteors were in directions *from* the constellation of Leo; most of them were accompanied by trains, and in several cases the track remained visible from two to four minutes after the disappearance of the meteor. The majority of the meteors, particularly in the early part of the night, were extremely brilliant, and several exhibited a variety of colours. The apparent superiority of this recent display was owing to the remarkably clear state of the sky during the greater part of the night, and the absence of moonlight; whereas in 1867 the sky was overcast till 1, A.M., and subsequently, when the clouds had partially or wholly disappeared, the visibility of the meteors were greatly impaired by haze and bright moonlight. But for these causes the total number recorded last year would probably have been three times as great as in 1868.

Number of Meteors counted at the Magnetic Observatory, Toronto, on the nights of November 13, 14, 1867, 1868:

	1867.	*1868.*
Before midnight,	0	173
Midnight to 1 A. M. of November 14,	20	320
1 A. M. to 2 " " "	44	583
2 " to 3 " " "	123	489
3 " to 4 " " "	560	375
4 " to 5 " " "	1345	572
5 " to 6 " " "	195	365
Total,	2,286	2,486

CANADIAN INSTITUTE.

ANNUAL REPORT OF THE COUNCIL FOR THE YEAR 1866-'67.

The Council of the Canadian Institute have the honour to present the following Report of the proceedings of the Society for the past year, from 1st December, 1866, to 30th November, 1867:—

MEMBERSHIP.

The present state of membership is as follows:—

Members at commencement of Session, December 1st, 1866.....		384
" Elected during Session 1866-'67.....		17
" " by Council during Recess, 1867.....		1
		402
Deduct		
Deaths.....	4	
Withdrawn.....	11	
Left the Province.....	5	
For non-payment of Subscription	8	
		28
Total, 30th November, 1867.....		374
Composed of		
Honorary members.....	4	
Life members	30	
Corresponding members.....	5	
Junior members	0	
Ordinary members.....	335	
Total.....		374

COMMUNICATIONS.

The following list of papers, read at the ordinary meetings held during the Session, will be found to contain many valuable communications, and some of general interest:—

1*st December*, 1866.—Professor D. Wilson, LL.D., "On Literary Forgeries."

8*th December*, 1866.—Rev. Prof. W. Hincks, F.L.S., &c., "On some Bird Skins presented to the Institute by Mr. Gold, per the Hon. G. W. Allan, M.L.C."

15*th December*, 1866.—The Annual Report of the Council was read by the Treasurer, and was unanimously adopted.

12*th January*, 1867.—President Prof. H. Croft, D.C.L., "The Annual Address."

26th January, 1867.—Specimens of Animal Remains and Works of Human Art found in the gravel pits and Dordogne Caves, were exhibited, and a description of them given by Dr. Chapman, with reference to their geological position, and particularly to the question of their extreme antiquity.

Dr. Wilson discussed the question of the extent of the civilization existing among the inhabitants of these caves, and combatted the theory of the extreme degradation of man at that period from the very nature of the remains themselves.

9th February, 1867.—Dr. Wilson explained the effect that temperature of climate may have had on the human remains found in the cave in Dordogne, presented to the Institute by Dr. Thorburn.

23rd February, 1867.—Rev. J. McCaul, LL.D., "On Boys and Girls' Homes among the Ancients."

9th March, 1867.—C. B. Hall, Esq., M.D., "On Consumption."

23rd March, 1867.—Rev. Prof. W. Hincks, F.L.S., &c., "On Mollusca."
C. B. Hall, Esq., M.D., "On some Chemical Changes in the Human System."

6th April, 1867.—Prof. E. J. Chapman, Ph. D., "Journey to the Rocky Mountains of Colorado, with remarks on the Assaying of Gold and Silver."

27th April, 1867.—Rev. Prof. W. Hincks, F.L.S., &c., "Continuation of remarks on Molluscous Animals, Lammellæ Branchiatæ division."

Prof. D. Wilson, LL.D., "Notes on the North Shore of Lake Superior and the Nepigon River."

TREASURER AND AUDITORS' REPORT.

Statement of the Canadian Institute General Account, from the 1st December, 1866, *to 30th November*, 1867.

DEBTOR.

Cash Balance last year			$105 58
" Received from Members			495 50
" " for Rent			14 71
" " for Interest on Securities, &c			194 86
" " per A. E. Walker, for Building Fund			1 00
" " for sale of Journals..	Old Series.. $6 91 New " .. 20 00		26 91
Due by Members			1107 75
" Journals	Old Series .... $114 25 New " 43 25	.....	157 50
" for Interest on Securities....			186 00
			$2,889 81

CREDITOR.

Cash paid for Journal, 1867—Printing	$196 18
" for Postage	3 12
" for Library and Museum	74 02
" on acc't of Sundries, including Salary, Fuel, Light, Postage, &c., &c.	539 15
" due on account of Journal	240 00
" due on account of Sundries	66 00
Estimated Balance	1,771 33
	$2,889 81

SAMUEL SPREULL, *Treasurer.*

The TREASURER *in account with the* CANADIAN INSTITUTE, *from the 1st December, 1866, to the 30th November, 1867.*

DEBTOR.

Cash Balance last year	$105 58
" Received from Members	495 50
" " for Interest on note $186, on current acc't $8 86	194 86
" " for Rent	14 72
" " Donation for Building Fund	1 00
" " sale of Journal .... { Old Series ... $6 91 / New " ... 20 00 }	26 91
Securities	3100 00
	$3938 56

CREDITOR.

Cash paid on acc't of Journal for Printing and Postage, 1867.	$199 80
" paid on account of Sundries for Institute	539 16
" " of Library and Museum	74 02
Securities	3100 00
Balance in Hand	26 08
	$3938 56

SAMUEL SPREULL, *Treasurer.*

TORONTO, 7th December, 1867.

We hereby certify that we have compared the Vouchers with the Cash Book, and have found the same to agree. We also find that the Balance in the Treasurer's hands is twenty-six dollars and eight cents.

W. J. MACDONELL, }
GEORGE MURRAY, } *Auditors.*

LIBRARIAN'S REPORT.

No changes have taken place in the disposition of the library of the Institute since the last report.

Our collection of works having reference to the early history of this continent in general, and Canada in particular, has been enriched by the addition to it of the well-known, but rather scarce, Travels of Rochefoucault Liancourt, especially interesting as containing an account of the state of things in the Province of Upper Canada at the close of the last century. The full description of this work is as follows:—"Travels through the United States of North America, the country of the Iroquois and Upper Canada, in the years 1795, 1796, and 1797, by the Duke de la Rochefoucault Liancourt, with an authentic account of Lower Canada. Three maps, several tables, &c. Second edition. Four vols. Royal 8vo. London: 1800."

In addition to this desirable acquisition we have the gratification of naming another of a somewhat similar character, although not so locally interesting:—"Travels in America, performed in 1806, for the purpose of exploring the Rivers Alleghany, Monongahela, Ohio and Mississippi, and ascertaining the produce and condition of their banks and vicinity, By Thomas Ashe, Esq. Three volumes in one. 12mo. London, 1808."

These are the valuable donations of Lawrence Heyden, Esq., Corresponding Secretary of the Institute.

Mr. Heyden also contributes a curious tract of thirty-seven pages, in quarto, containing a translation in Latin of the Journal of Martin Frobisher, during his explorations in the Arctic Regions in 1577. The full title is as follows:—

"I.N.J.—Historia Navigationis Martini Forbisseri [sic passim], Angli Prætoris sive Capitani, A.C. 1577, Maio, Junio, Julio, Augusto et Septembri Mensibus, jussu Reginæ Elisabethæ, ex Angliâ in Septemtrionis et Occidentis tractum susceptæ, Ephemeridis sive diarii more conscripta et stilo, triennioque post, ex Gallico in Latinum sermonem, à Joh. Thomâ Freigio translata, et Noribergæ, ante A. 94. cum præfatione utili, observationibusque aliquot et appendice edita, denuo prodit è Museo D. Capelli, P.P. Hamburgi, sumptibus Joh. Numanni et Georgi Wolfii. Anno 1675." The frontispiece is a curious copperplate engraving, showing, at the top, a man in a canoe aiming a spear of three prongs at a bird in the air; at the bottom, on the left, a small map of "Forbisser's Straet," &c.; and on the right a representation of two veritable unicorns. We learn from the notes that these are inserted because their existence is analogically proved by the fact that Frobisher actually met with sea-unicorns, locally called Narwhals—the horn of which was found, by experiment, to be fatal to spiders—just as the horn of the real land-unicorn is reported to be to life generally, by reason of a certain exudation.

Mr. Heyden also presents to the Library the two following valuable and interesting works:—

"Consuetudines Kanciæ: A History of Gavelkind and other remarkable customs in the County of Kent. By Charles Sandys, F.S.A. (Cantianus). 8vo. London: John Russell Smith. 1851."

"Rome: Its Ruler and Its Institutions. By John Francis Maguire, M.P. 8vo. New York: D. & J. Sadlier. 1858."

The usual reports and scientific publications of Europe and this Continent, in continuation of the several series already on our shelves, have been received: *e. g.* the Transactions of the Royal Irish Academy, the Linnæan Society, &c.

Especially to be mentioned, also, among these are—

"The Patent Office Reports, Parts I. and II. of the United States: 1864-'65. Full bound in sheep; the 2nd part consisting wholly of plates. Royal 8vo."

"The Smithsonian Miscellaneous Collections. Vols. VI. and VII. Royal 8vo. Unbound; and the Smithsonian Contributions to Knowledge. Vol. XIV. 4to.

"The Memoirs of the Geological Survey of India. Six parts. Published at Calcutta, with numerous beautiful copperplate engravings."

So soon as the funds of the Institute shall be in a sufficiently flourishing condition there are many volumes of serial works and other publications in parts that require to be bound.

Respectfully submitted.

December 21st, 1867. H. SCADDING, *Librarian.*

APPENDIX.

DONATIONS OF BOOKS, &c., SINCE LAST ANNUAL REPORT.

Marked thus * not bound.

From the Royal Scottish Society of Arts, Edinburgh.

	VOLS.
Transactions of, Vol. 7, Part I.	*1

From L. Heyden, Esq., Toronto.

May's Constitutional History of England, Vol. 1	1
Rome; Its Ruler and Its Institutions—By John Francis Maguire, M.P. New York, 1858	1
Martini Forbisseri Navigatio. Hamburgi, 1675	*1
Consvetvdines Kanciæ. By Charles Sandys, F.S.A., 1851	1
Ashe's Travels in America. Vols. 1, 2 & 3 in 1 vol. 1806; London, 1808,	1
Travels in America, by Rochefoucault, 1795, '96 & '97. Vols. 1, 2, 3 & 4	4

From the Literary and Philosophical Society, Manchester.

Memoirs of, Vol. II., 3rd Series, Vol. XXII., old, 1865	1
Proceedings of, 1862-3 and 1863-4	*1
Do. 1864-65	*1

From the Geological Society of Dublin.

Journal of, Vol. I., Part 2, 1865-66, 2nd Session	*1

Through the Smithsonian Institution, Washington.

Meteorologische Iaarbock Eerste Gedeelte Waarnemingen in Nederland. Uitgeven door het Koninklijt Nederlandsch Meteorologisch Instituut Utrecht. 1865, V. I.	1
Do. do. 1865, V. II.	1
Mittheilungen der Kaiserlich-Koniglicher Geographischen Gesellschaft, &c. Wein, 1864	1

Through ditto, from University of Christiania.

Magnetismus der Erde Von Christopher Hansteen, &c. Christiania, 1819	1
	Maps.
Magnetischer Atlas, Gehörig Zum Magnetismus der Erde Von Christopher Hansteen, Profr. Christiania, 1819	7
Resultate Magnetischer, Astronomischer und Meteorologischer Beobachtungen, &c., 1828–1830. Von Christoph. Hansteen and Lieutenant Due. Christiania, 1863	1
	Sheet.
Forelaesninger ved det Kgl. norske Frederisks Universitet i lste semster, 1864	1
Om de elliptiske Funktioners Raekkendvikling af Dr. O. J. Broek, 1864	*1

VOLS.

Forhandlinger i Videnskab-Selskabet I. Christiania, Aar 1864 ..... *1
Meteorologiske Jagttagelser Paa Christiania Observatorium, 1865..... *1
Generalberetning fra Gaustad Sindssygeasyl for Aaret 1865..... *1
Det Kongelige norske Fredericks Universitets aars-beretning for Aaret 1864, *1
Ezechiels Syner og Chaldeernes astrolab af C. A. Holmboe. Universitets program for Andet Halvaar, 1866 ..... *1
Bidrag tif, &c., &c. Christiania, 1865 ... . *1
Maerker efter en Jisted I omegnen af Hardangerfjorden af S. A. Sexe, 1866, *1
Det Kongelige norske Fredericks Universitets Aarsberetning for Aaret 1865, og Universitets budget 1860–1869.....1866..... *1
Foreningen til norske Fortidsmindes merkers Bevaring Aarsberetning for 1865..... *1
Norwegian Buildings from former times. Christiania, 1865..... *1
Nyt Magazin for Naturvedenskaburne Udgives afden Physiographiske Forening Christiania, Ved. M. Sars og Th. Kjerulf, 1866 ..... *2
Ungedruckte Umbeachtete und Wenig Beachtete Quellen, &c. Von Dr. C. P. Caspari, 1866..... *1
Norske Fornlevninger, &c., af N. Nicolaysen..... *1
Mitthulungen der Kaiserlich-Königlichen Geographischen Gesellschaft IX. Jahrgang. Von Franz Foetterle. Wien, 1865..... *1
Abhaadlungen herausgegeben vom naturwissenschaftlichen Vereine Zu Bremen, 1 Bd. 1 Heft., 1866 .... *1
Smithsonian Miscellaneous Collections, Vol. VI..... *1
" " " Vol. VII. *1
" Contributions to Knowledge, Vol. XIV..... 1
Verhandlungen der Kaiserlich Koniglichen Zoologisch-Botanischen Gesellschaft in Wien Jahrgang, 1865, XV. Band Wien, 1865 ..... *1

From Royal Irish Academy.

Transactions of, Vol. XXIV. Antiquities, Part 5..... *1
" " " " 6..... *1
" " " " 7..... *1
" " Science, " 5..... *1
" " Polite Literature, Part 3 ..... *1
" " Science, Parts 7 & 8 ..... *2
Proceedings of, Vol. IX., Part IV..... ..... *1

From the Linnæan Society.

List of the Society for 1865, 1; for 1866, 1 ..... *2
Journal of the Society—Zoology, Vol. IX., Nos. 33, 34 & 35..... *3
" " Botany, Vol. IX., Nos. 35, 36, 37, 38, 39 ..... *5
Journal of the Proceedings of the Society—Zoology, Vol. VIII, Nos. 31 & 32, *1

From Dr. Oldham, Superintendent of the Geological Survey of India.

Memoirs of the Geological Survey of India—Wynne, A. B., on the Geology of the Island of Bombay *1

VOLS.

Memoirs of the Geological Survey of India—Palæontologia Indica—being figures and descriptions of the organic remains procured during the progress of the Survey under the direction of Thomas Oldham, LL.D. 3. 10–13. The Fossil Cephalopoda of the Cretaceous Rocks of Southern India (ammonitidæ), by Ferdinand Stoliczka, Ph. D..... *1

Memoirs of do. Hughes, T. W. H., on the Structure of the Sherria Coal Fields. Stoliczka, Ferd., Geological Observations in Western Tibet... *1

Memoirs of do., Catalogue of the Meteorites in the Museum of Geological Survey of India, Calcutta *1

Memoirs of do., Catalogue of the Organic Remains belonging to the Cephalopoda, in the Museum of the Geological Survey of India, Calcutta ... *1

Annual Report of the Geological Survey of India and of the Museum of Geology, Calcutta. Tenth year, 1865–6..... *1

From Hon. J. M. Brodhead, Washington.

Patent Office Reports, United States of America, for 1864–5, Parts 1 & 2.. 2

From the Office of the Provincial Secretary.

Geological Survey of Canada, Sir W. E. Logan, Director. Report of Progress from 1863 to 1866, Ottawa, 1866..... 1

From the Royal Geographical Society, per Mr. Rowsell.

The Journal of, Vol. 33, 34, 35 & 36, years 1863–64–65–66..... *4

From the Royal Asiatic Society, per Mr. Rowsell.

The Journal of, Parts 3 & 4, 1863. Vol. 20..... *1
" " Parts 1 & 2, New Series, 1864 and 1865 ..... *2
" " Parts 1 & 2, New Series, 1866..... *2

From the Entomological Society.

Annual Report of the Entomological Society of Canada (Quebec Branch), read at the meeting of the Society, 9th January, 1867..... 1

From the Chicago Historical Society.

Collections of the Minnesota Historical Society for 1867..... 1

Eleventh Annual Report of the Board of Guardians of the Chicago Reform School, 31st March, 1867..... 1

Labor Extracts, Magazine Articles, and Observations relating to Social Science and Political Economy..... 1

From Rev. J. H. Hubbert, M.A., Ph. D.

Catalogue of Canadian Plants 1

From Joel Rowsell, London.

Catalogue of Second-hand Books 1

From McGill College, Montreal.

Calendar of Sessions, 1867-'8..... 1

From Paris, Librairie Tross.

	VOLS.
Catalogue des Livres Anciens, 1867, No. VI.	1

Through the Smithsonian Institute, Washington.

Abhandlungen ausdem, &c., in Hamburg, V. Band, 1 abth. mit. 2 Tafeln, Homburg, 1856	1
Do. Do. IV. Band 4 abth. mit 23 Tafeln, Hamburg, 1866	1
Uibersicht der Aemter—Vertheilung, &c. Hamburg, im Jalire, 1865	1

From Leeds Philosophical and Literary Society.

Annual Report for 1864-'65	1
Annual Report for 1865-'66	1
Report of the Proceedings of the Geological and Polytechnic Society of the West Riding of Yorkshire, 1865-'66	1

From the Mechanics' Institute.

Thirty-sixth Annual Report of the Toronto Mechanics' Institute. May, 1867	1

From the Royal Geographical Society, per Mr. Rowsell.

Proceedings of, Vol. IX., Nos. 1, 2, 3, 4, 5 and 6. 1865	6
" " X., Nos. 1, 2, 3, 4, 5 and 6. 1856	6
" " XI., Nos. 1, 3, 4 and 5. 1867	4

From the Geological Society, per Mr. Rowsell.

The Quarterly Journal of, Vol. 18, part 3, No. 71. August, 1862	1
Volume 20, part 4, No. 80. November, 1864	1
List of the Geological Society. 1st November, 1864	1
Volume 21, February, May, August, November. Nos. 81, 82, 83 and 84	4
List of the Geological Society, 31st December, 1865	1
Volume 22, February, May, Aug., Nov. Nos. 85, 86, 87 and 88, 1866	4
List of the Geological Society. 1st November, 1866	1
Volume 23, February, May, August. Nos. 89, 90 and 91, 1867	3

In Exchange for Journal.

Journal of the Society of Arts, London (two copies), 1867	1
" " Education, Upper Canada (two copies), 1867	1
" " The Franklin Institute, Philadelphia, 1867	1
The Artizan (London), 1867	1
Silliman's Journal, 1867	1
Journal of the Board of Arts and Manufactures, Toronto	1
Proceedings of the Antiquarian Society, Boston	1
" " Academy of Natural Sciences, Philadelphia	1
Historical Recollections of the Essex Institute	1
Annales des Mines	1
Proceedings of Boston Natural History Society	1
Annals of the Lyceum of Natural History, New York	1

	VOLS.
Transactions of the Royal Society of Edinburgh	1
Bulletin de la Société Géologique de France, 11e Serie, T. XXIV	1
Journal Royal Geological Society of Ireland	1

Donations for Museum. (*By J. Fleming, Esq.*)

Bottles of oil from the Manitoulin Islands, one refined, one crude	2

(*By James Thorburn, Esq., M.D.*)

Specimens of animal remains and works of human art found in the gravel pits and Dordogne Caves in France:—

Flint	27
Bones	20
Teeth	7
Conglomerate	3
Stone	2
Total	59

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—MAY, 1867.

Latitude—43° 39 4 *North.* *Longitude*—5h. 17m. 33s. *West.* *Elevation above Lake Ontario*, 168 *feet.*

Day.	Barom. at temp. of 32°. 6 A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 PM	ME'N.	Excess of Mean above Normal.	Tension of Vapour. 6 A. M	2 P.M.	10 P.M.	M'N.	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Direction of Wind. 6 A.M.	2 P.M.	10 P.M.	Resultant.	Velocity of Wind. 6 A.M.	2 P.M	10 P.M.	Res'l-tant.	MEAN	Rain in inches.	Snow in inches.
					°	°	°	°	°												°							
1	29.244	29.304	29.434	29.3362	38.1	44.3	39.2	40.25	— 6.17	.213	.221	.199	.212	93	76	83	85	N N W	N W	W N W	N 51 W	22.5	27.5	21.5	19.94	20.99	0.235	...
2	.599	.788	.938	.7902	31.3	34.3	28.4	31.43	— 15.28	.129	.101	.105	.116	73	50	66	65	W	W N W	Calm.	N 75 W	13.5	25.5	0.0	11.39	11.45	...	Inap.
3	30.052	30.072	.985	30.0323	26.2	37.8	33.1	33.70	— 13.35	.110	.106	.153	.123	77	47	81	64	Calm	S E by E	E	S 78 E	0.0	4.2	7.8	6.09	6.66	...	...
4	29.895	29.636	.578	29.6808	36.3	49.0	45.7	44.28	— 3.13	.193	.168	.221	.194	90	47	72	68	E	E by N	E S E	N 87 E	13.4	16.0	5.4	8.85	8.97	.055	...
5	.420	.414	—	—	44.6	56.5	—	—	—	.253	.402	—	—	86	88	—	—	E	S S W	S W	S 24 W	6.5	3.6	3.1	3.25	3.70	Inap.	...
6	.517	.486	.497	.4928	46.4	49.0	41.4	44.80	— 3.23	.269	.266	.232	.253	85	77	89	85	Calm	S by W	S W by W	S 39 W	0.0	7.0	3.0	4.07	4.78	.190	...
7	.465	.471	.496	.4752	38.1	49.0	42.8	43.78	— 4.63	.187	.178	.223	.200	81	51	81	71	W S W	S W by W	N	N 48 W	0.2	4.3	9.0	3.65	7.16	...	...
8	.408	.230	.179	.2577	38.9	53.6	46.1	46.20	— 2.58	.194	.197	.207	.194	81	47	66	63	N	N	N N W	N 19 W	17.6	19.8	20.0	20.21	20.77	Inap.	...
9	.151	.178	.292	.2158	43.5	54.4	45.7	46.97	— 2.20	.178	.236	.185	.192	62	55	60	59	N W	N W by N	W by S	N 48 W	23.6	24.0	6.0	13.73	14.10	...	...
10	.358	.335	.445	.3842	39.6	61.6	42.8	48.72	— 0.78	.167	.334	.195	.236	68	61	70	66	W N W	W by N	W by N	N 76 W	6.6	15.0	4.5	6.96	7.65	...	...
11	.486	.513	.617	.5472	39.9	57.3	42.8	47.82	— 2.08	.181	.271	.160	.197	73	57	57	58	W N W	S by W	N W	N 61 W	7.0	5.0	9.8	7.31	9.79	...	...
12	.709	.710	—	—	43.9	55.8	—	—	—	.151	.184	—	—	53	41	—	—	N by W	S by W	N W by W	N 61 W	7.6	11.0	5.4	2.62	5.38	...	...
13	.630	.420	.223	.4080	41.0	45.7	46.8	44.93	— 5.63	.232	.239	.234	.235	90	78	74	79	N	E N E	N E by E	N 60 E	0.5	14.5	12.6	7.73	8.91	.255	...
14	.127	.126	.201	.1520	43.9	51.8	45.4	46.87	— 4.02	.273	.301	.235	.265	95	78	77	82	S W by W	W S W	W	S 77 W	2.5	14.4	12.0	8.94	9.29	.035	...
15	.133	.156	.315	.2105	43.2	49.3	45.7	46.07	— 5.22	.227	.232	.230	.229	81	65	75	74	W	N W by N	W by N	N 60 W	4.7	17.0	9.3	11.00	11.44	Inap.	...
16	.373	.410	.447	.4212	42.5	57.6	47.5	49.07	— 2.52	.218	.266	.255	.246	80	56	77	71	W N W	S by E	N W	N 59 W	5.5	6.2	9.0	4.07	6.70	...	...
17	.505	.521	.653	.5723	42.8	61.1	45.7	48.28	— 3.70	.195	.258	.211	.210	70	68	68	63	N W by N	S W by S	N W by W	N 52 W	4.2	9.6	17.2	8.31	10.70	...	...
18	.782	.760	.774	.7753	45.7	55.6	47.9	49.58	— 2.70	.221	.200	.192	.203	72	44	57	58	N W	N N W	N N W	N 31 W	13.1	15.0	5.2	10.99	11.06	...	...
19	.772	.699	—	—	46.4	52.6	—	—	—	.194	.258	—	—	61	66	—	—	N by W	S S W	W by S	S 49 E	6.6	1.6	0.8	0.74	2.80	.055	...
20	.550	.563	.527	.5428	45.0	54.4	45.0	47.67	— 5.35	.269	.256	.239	.253	90	60	80	77	N E	E S E	Calm	N 85 E	6.5	8.0	0.0	3.97	4.69	...	...
21	.462	.249	.129	.2563	48.2	54.0	47.2	49.55	— 3.77	.255	.191	.310	.246	75	45	95	70	E N E	E by N	E by S	N 87 E	4.4	19.8	14.0	12.55	12.69	1.090	...
22	.062	.069	.046	.0518	46.4	49.0	46.1	47.47	— 6.23	.290	.287	.273	.286	92	82	87	87	E S E	S	S W	S 12 W	3.2	14.0	9.0	5.96	7.55	.140	...
23	.049	.186	.373	.2180	42.3	49.7	44.1	45.08	— 8.88	.242	.257	.237	.245	89	71	82	82	S W by S	N W by W	W by S	N 80 W	7.0	16.0	6.6	8.13	9.10	.080	...
24	.506	.514	.535	.5282	42.8	57.6	46.8	48.77	— 5.52	.213	.287	.253	.255	77	60	79	74	W	S by E	E	S 1 W	7.0	8.6	3.4	2.32	5.35	.310	...
25	.508	.350	.340	.3888	50.4	51.8	45.0	49.50	— 5.18	.257	.332	.249	.283	70	86	83	80	E by S	S by W	S W by W	S 14 W	4.2	7.2	1.6	4.48	5.83	.345	...
26	.415	.445	—	—	45.7	56.5	—	—	—	.249	.260	—	—	81	56	—	—	W S W	W N W	N N W	N 61 W	3.0	14.0	3.1	7.63	8.15	...	...
27	.694	.741	.742	.7258	43.2	53.6	48.9	49.30	— 5.98	.217	.226	.207	.211	77	54	59	60	N N W	S S W	Calm	N 33 W	2.8	4.0	0.0	1.44	2.87	Inap.	...
28	.727	.595	.538	.6130	46.1	48.6	47.5	48.60	— 7.05	.263	.279	.276	.272	84	81	84	79	N	E by N	Calm	N 60 E	3.6	12.6	0.0	4.50	4.67	.270	...
29	.470	.467	.525	.4862	48.6	61.6	55.8	54.97	— 0.98	.322	.217	.333	.363	94	76	74	84	Calm.	S E by E	W N W	S 86 W	0.0	1.6	9.2	1.01	2.41	Inap.	...
30	.553	.547	.611	.5715	51.1	56.9	48.6	52.02	— 4.23	.299	.329	.230	.286	80	71	67	73	S W by W	S S W	W N W	N 71 W	3.6	7.6	11.5	8.90	11.45	.160	...
31	.722	.777	.750	.7502	45.7	56.2	50.8	51.22	— 5.33	.249	.316	.293	.291	81	70	78	77	N N W	S S W	Calm	N 64 W	11.0	8.0	0.0	1.37	3.38	...	...
M	29.4825	29.4613	29.4883	29.4772	42.49	51.66	44.92	46.55	— 4.93	.225	.250	.227	.233	81	63	75	72	.....	.....	.....	.....	6.84	11.60	7.10	.....	8.40	3.220	Inap.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 30.093 at 8 a.m. on 3rd.
Lowest Barometer . . . . . 29.044 at midnight on 22d. } Monthly range= 1.049 inches.

Self-registering Ther.
- Maximum temperature . . . . 65°0 on 29th
- Minimum temperature . . . . 24°6 on 3rd } Monthly range=40°4
- Mean maximum temperature . . 54°77
- Mean minimum temperature . . 39°75 } Mean daily range=15°02
- Greatest daily range . . . . . 26°3 from a.m. to p.m. of 10th.
- Least daily range . . . . . 4°6 from a.m. to p.m. of 6th.

Warmest day . . . 29th...Mean temperature . . . 54°97
Coldest day . . . . 2nd...Mean temperature . . . 31°43 } Difference=23°54.

Maximum { Solar . . . . . 114°.5 on 26th
Radiation { Terrestrial . . . . . 9°.8 on 3rd } Monthly range=104°.7

Aurora observed on 8 nights, viz.:—1st, 2nd, 23rd, 27th, 28th, 29th, 30th, and 31st.
Possible to see Aurora on 19 nights; impossible on 12 nights.
Snowing on 1 day; depth, inapp.; duration of fall, 1.0 hour.
Raining on 18 days; depth, 3.220 inches; duration of fall, 68.9 hours.
Mean of cloudiness=0.69. Most cloudy hour observed, 4 p.m.; mean, 0.81; least do., do., 10 p.m.; mean, 0.53.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
2638.80	964.14	1167.98	3213.03

Resultant direction, N. 51. W.; resultant velocity, 3.55 miles per hour.
Mean velocity, 8.40 miles per hour.
Maximum velocity, 29.0 miles, from 1 to 2 p.m. of 1st.

Most windy day, 1st; mean velocity, 20.99 miles per hour.
Least windy day, 29th; mean velocity, 2.41 miles per hour. } Difference, 18.58 miles.

Most windy hour, 1 p.m.; mean velocity, 11.79 miles per hour.
Least windy hour, midnight; mean velocity, 5.48 miles per hour. } Difference. 6.31 miles.

2nd. Snow; last of season. 7th. Ice; last of season. 8th. Rainbow. 9th. Lunar Corona. 18th. Lunar halo. 19th. Lunar halo. 24th. Heavy thunderstorm, with hail and rain. 25th. Rainbow. 27th. Last recorded frost of season. 30th. Rainbow. 31st. Solar halo.

16th. Humming birds numerous. 19. May bugs and fire flies seen.

COMPARATIVE TABLE FOR MAY.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum	Minimum.	Range.	RAIN. No. of days	Inches.	SNOW. No. of days	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1840	53.8	+ 2.2	76.4	31.2	45.2	9	4.150	0	0.0	...	...	...
1841	50.5	— 1.1	78.0	26.5	51.5	11	2.350	1	Inp.	...	...	0.35 lbs.
1842	49.1	— 2.5	74.8	27.3	47.5	7	1.275	0	0.0	...	...	0.53
1843	49.1	— 2.5	79.8	29.2	50.6	5	1.570	0	0.0	...	...	0.52
1844	53.6	+ 2.0	78.4	28.7	49.7	14	5.670	0	0.0	...	...	0.30
1845	49.6	— 2.0	77.8	27.8	50.0	8	2.300	0	0.0	...	...	0.55
1846	55.5	+ 3.9	79.7	33.1	46.6	9	4.375	0	0.0	...	...	0.46
1847	54.4	+ 2.8	72.1	26.7	45.4	12	2.040	0	0.0	...	...	0.29
1848	54.1	+ 2.5	78.0	31.3	46.7	13	2.520	0	0.0	N 40 W	1.81	4.9 miles.
1849	48.0	— 3.6	72.2	27.9	44.3	16	5.115	0	0.0	N 51 E	1.97	5.33
1850	47.6	— 4.0	77.8	27.5	50.3	7	0.545	1	Inp.	N 64 W	2.05	6.32
1851	51.3	— 0.3	73.3	28.0	45.3	12	2.950	1	0.5	N 52 W	1.59	6.34
1852	51.4	— 0.2	73.3	32.0	41.3	7	1.125	1	Inp.	S 82 W	0.99	4.00
1853	50.9	— 0.7	78.4	32.2	46.2	17	4.420	1	Inp.	N 2 W	0.83	5.16
1854	52.2	+ 0.6	71.4	25.2	46.2	11	4.630	0	0.0	E	0.40	5.38
1855	53.1	+ 1.5	77.5	33.0	44.5	6	2.565	2	0.9	N 1 W	2.76	5.93
1856	50.5	— 1.1	82.2	31.2	51.0	14	4.580	1	Inp.	N 4 E	3.99	9.81
1857	48.9	— 2.7	74.8	26.0	48.8	15	4.145	1	Inp.	N 28 W	1.14	8.13
1858	48.9	— 2.7	69.8	31.0	38.8	17	6.367	0	0.0	N 42 E	3.33	9.30
1859	55.2	+ 3.6	79.6	39.5	40.1	11	3.410	0	0.0	N 72 E	1.59	5.70
1860	55.5	+ 3.9	74.5	32.5	42.0	16	1.815	0	0.0	N 26 E	2.66	7.17
1861	47.5	— 4.1	73.0	28.0	45.0	12	3.380	1	0.5	N 47 W	3.60	9.17
1862	52.2	+ 0.6	78.5	32.4	46.1	8	1.427	0	0.0	N 52 W	2.80	7.87
1863	54.3	+ 2.7	79.0	36.4	42.6	14	3.363	1	0.1	N 56 E	0.41	5.89
1864	54.8	+ 3.2	79.0	32.2	46.8	18	4.070	0	0.0	N 7 W	1.86	5.64
1865	52.3	+ 0.7	79.0	30.0	49.0	11	4.005	0	0.0	N 3 W	1.65	5.48
1866	48.3	— 3.3	73.4	33.4	40.0	13	2.820	0	0.0	N 46 W	4.49	9.26
1867	46.6	— 5.0	65.0	24.6	40.4	18	3.220	1	Inp.	N 51 W	3.55	8.40
Results to 1867.	51.58	.....	76.36	30.38	45.98	11.59	3.222	0.4	0.08	N 12 W	1.59	6.67
Exc. for 1867.	—4.98	.....	—11.3	—5.7	—5.58	+ 6.41	— 0.002	+ 0.6	— 0.08	...	...	+ 1.73

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—JUNE, 1867.

Latitude—43° 39′4 *North. Longitude*—5h. 17m. 33s. *West. Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°. 6. A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 P.M.	M'N	Excess of mean above Normal.	Tens. of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N	Direction of Wind. 6 A.M.	2 P.M.	10 P.M.	Resul't. Direction.	Velocity of Wind. 6 A.M.	2 P.M.	10 P.M.	Result'.	M'N.	Rain in inches.	Snow in inches.
					°	°	°	°	°																			
1	29.742	29.635	29.510	29.6167	48.2	62.3	60.5	58.85	— 0.07	.297	.302	.326	.308	88	53	61	67	S W	E	E N E	N 77 E	0.5	4.2	13.6	4.46	4.67	.020	...
2	.385	.240	—	—	53.3	58.0	—	—	—	.355	.465	—	—	87	96	—	—	E B N	Calm.	Calm.	S 74 E	2.0	0.0	0.0	1.11	1.33	.520	...
3	.143	.175	.258	.2033	53.3	61.6	57.6	57.98	+ 0.43	.377	.393	.331	.368	92	71	69	77	S W	S W B S	W B N	S 72 W	1.6	4.8	10.8	7.25	7.69	...	...
4	.391	.466	.561	.4878	56.9	71.0	57.3	61.23	+ 3.38	.362	.407	.335	.360	78	54	71	67	Calm.	S	Calm.	N 51 W	0.0	3.6	0.0	2.16	3.38	...	...
5	.665	.661	.590	.6383	55.4	68.4	55.8	60.13	+ 1.98	.349	.314	.333	.333	80	45	74	65	Calm.	S B E	Calm.	S 21 E	0.0	2.2	0.0	0.96	1.28	...	...
6	.684	.508	.478	.5183	54.4	71.7	63.4	64.18	+ 5.73	.308	.477	.469	.426	73	61	80	70	Calm.	S E	Calm.	S 15 W	0.0	1.8	0.0	0.69	0.92	...	...
7	.541	.565	.658	.5883	69.5	74.9	56.5	68.07	+ 9.32	.547	.619	.390	.533	76	72	85	77	Calm.	S S W	E B N	N 52 E	0.0	3.0	5.4	2.24	4.15	...	...
8	.703	.710	.732	.7172	65.9	67.0	59.1	63.98	+ 4.92	.347	.274	.333	.299	54	41	66	51	N E B N	E	N E	N 61 E	5.2	5.6	3.2	4.17	4.62	...	...
9	.782	.745	—	—	59.8	69.0	—	—	—	.392	.432	—	—	76	61	—	—	N N E	S E	S B E	N 77 E	3.1	2.6	1.8	1.19	1.91	...	...
10	.778	.791	.744	.7717	60.1	64.8	59.1	62.00	+ 2.22	.376	.399	.300	.344	72	65	60	62	E S E	E B S	N E	N 76 E	1.8	5.8	6.0	3.21	3.37	...	...
11	.770	.705	.613	.6877	57.3	64.8	58.3	60.98	+ 1.00	.357	.326	.278	.321	76	53	57	60	Calm.	E B S	Calm.	S 79 E	0.0	8.5	0.0	2.99	3.15	.080	...
12	.586	.584	.595	.5845	57.6	74.9	70.6	68.18	+ 7.92	.410	.369	.478	.472	86	42	64	69	Calm.	S W	W N W	S 40 W	0.0	0.8	6.6	2.85	3.31	...	...
13	.655	.656	.684	.6628	63.7	76.0	64.5	68.18	+ 7.60	.479	.418	.424	.438	81	46	69	64	Calm.	S E B S	N	S 59 E	0.0	5.0	2.8	0.62	2.83	...	...
14	.714	.603	.569	.6182	60.5	64.1	63.7	64.83	+ 4.00	.408	.447	.452	.458	77	75	76	74	E N E	E B S	S S W	N 88 E	2.4	8.2	1.2	1.88	3.25	...	...
15	.543	.492	.488	.5068	69.5	71.7	65.5	68.78	+ 7.66	.440	.618	.454	.495	61	79	71	69	S W B S	S W	S W B S	S 19 W	0.8	6.0	3.6	3.18	3.77	inap	...
16	.521	.583	—	—	64.8	90.0	—	—	—	.569	.408	—	—	92	39	—	—	Calm.	N E B N	N N W	N 14 W	0.0	3.2	4.8	1.35	2.30	...	...
17	.685	.623	.525	.5945	59.4	69.2	64.1	64.17	+ 2.52	.473	.578	.565	.540	93	81	94	90	E B N	E S E	Calm.	N 88 E	2.2	5.6	0.0	1.89	2.55	.105	...
18	.537	.588	.753	.6467	65.9	72.8	55.1	64.22	+ 2.27	.514	.314	.278	.378	80	38	64	63	W N W	W N W	N W B W	N 66 W	4.7	21.5	4.8	11.32	11.40	...	...
19	.811	.768	.760	.7793	52.6	70.2	58.0	61.35	— 0.78	.300	.314	.382	.359	75	42	79	68	Calm.	S B W	Calm.	S 20 W	0.0	10.2	0.0	3.27	3.51	...	...
20	.802	.834	.839	.8245	58.3	63.7	56.5	60.73	— 1.72	.425	.428	.402	.416	87	72	88	79	S W B S	E N E	N E B E	N 66 E	0.5	6.2	4.2	3.96	4.63	...	...
21	.832	.821	.787	.8185	59.8	67.0	56.5	61.82	— 0.85	.392	.422	.335	.394	76	63	73	71	N N E	E B S	Calm.	N 85 E	1.4	6.2	0.0	3.69	3.99	...	...
22	.781	.713	.673	.7160	59.8	76.0	62.7	66.17	+ 3.22	.428	.516	.466	.469	83	57	82	74	Calm.	Calm.	Calm.	S 70 E	0.0	0.0	0.0	1.54	1.65	...	...
23	.689	.619	—	—	66.3	75.3	—	—	—	.508	.554	—	—	78	63	—	—	Calm.	S E B E	N N E	S 83 E	0.0	5.6	1.4	1.01	1.78	...	...
24	.582	.547	.504	.5393	67.0	76.4	66.5	69.93	+ 6.58	.539	.569	.480	.530	81	62	76	72	Calm.	E B N	E B S	N 85 E	0.0	2.8	0.8	3.59	3.82	...	...
25	.496	.467	.480	.4830	70.6	74.9	66.8	70.95	+ 7.40	.546	.633	.549	.568	73	74	78	75	E N E	E B N	E N E	N 73 E	8.2	12.4	9.2	8.69	8.75	inap.	...
26	.543	.555	.575	.5607	62.7	71.7	64.5	66.05	+ 2.17	.492	.617	.586	.565	86	79	96	88	N E B E	E B S	E	N 83 E	6.5	4.5	5.0	3.34	3.42	.110	...
27	.569	.475	.483	.5120	65.2	73.8	64.1	68.17	+ 4.10	.550	.617	.459	.555	88	75	76	80	S B N	E B S	Calm.	N 10 E	1.0	9.0	0.0	1.02	5.73	.050	...
28	.641	.721	.763	.7195	59.0	69.9	57.3	61.87	— 2.42	.380	.460	.346	.383	76	63	73	69	W B N	S S W	Calm.	S 68 W	9.6	6.2	0.0	2.32	4.39	...	...
29	.796	.651	.526	.6422	58.3	72.8	64.5	66.68	+ 2.23	.367	.382	.494	.419	75	48	81	65	Calm.	S B E	S S W	S 24 W	0.0	9.2	4.0	6.46	7.15	...	...
30	.405	.278	—	—	67.0	86.1	—	—	—	.512	.729	—	—	77	58	—	—	S W B S	W B S	N W	N 88 W	8.6	17.0	3.3	5.26	9.20	...	...
M.	29.6356	29.6126	29.6059	29.6175	60.44	70.06	61.18	64.30	+ 3.27	.419	.449	.410	.429	79	60	75	71	.....	.....	.....	.....	2.02	6.06	3.07	.....	4.13	0.885	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JUNE, 1867.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....29.870 at 8 a.m. on 21st } Monthly range=
Lowest Barometer.....29.143 at 6 a.m. on 3rd } 0.727 inches.

Self-registg Thermom.
- Maximum Temperature .....88°6 on 30th } Monthly range=
- Minimum Temperature.....44°0 on 1st } 44°.6
- Mean Maximum Temperature .....73°36 } Mean daily range=
- Mean Minimum Temperature .....55°61 } 17°.75
- Greatest daily range.....28°0 from a.m. to p.m. on 29th.
- Least daily range .....10°2 from a m. to p.m. on 27th.

Warmest Day.....25th...Mean Temperature.....70°95 } Difference=14°07
Coldest Day..... 1st...Mean Temperature.....56°88 }
Maximum Radiation. { Solar .....130°0 on 27th and 30th } Monthly range=90°0
{ Terrestrial .....34°0 on 1st }

Aurora observed on 5 nights, viz.:—3rd, 20th, 21st, 22nd. and 25th.
Possible to see Aurora on 23 nights; impossible on 7 nights.
Snowing on days; depth inches; duration of fall hours,
Raining on 8 days; depth 0.885 inches; duration of fall 19.0 hours.
Mean of Cloudiness=0.45.
Most cloudy hour observed 8 a.m.; Mean, 0.49; least cloudy hour observed midnight; Mean, 0.39.

Sums of the components of the Atmospheric Current, expressed in Miles,

North.	South.	East.	West.
729.45	768.31	1288.97	942.22

Resultant Direction S. 84° E.; Resultant Velocity 0.48
Mean Velocity 4.13 miles per hour.
Maximum Velocity 22.5 miles, from 3 to 4 p.m., of 18th.
Most Windy day 18th; Mean Velocity 11.40 miles per hour. } Difference 10.48 miles.
Least Windy day 6th; Mean Velocity 0.92 miles per hour. }
Most Windy hour 3 p.m.; Mean Velocity 6.89 miles per hour. } Difference 5.23 miles.
Least Windy hour 3 a.m.; Mean Velocity 1.66 miles per hour. }

2st, Solar halo.
1nd, Fine Rainbow. 5th. Thunder.
6th, Lightning. 7th. Solar halo,
8th. Solar halo. 12th, Lunar halo. Thunder and Lightning.
13th, Lunar halo. 14th, Thunder and Lightning.
15th, Rainbow. Lunar halo.
16th. Solar halo. 17th, Thunder and Lightning.
22nd, Lightning. 24th, Lightning. 25th, Lightning,
27th, Lightning, 29th and 30th, Lightning.

COMPARATIVE TABLE FOR JUNE.

Year.	Temperature. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	Rain. No. of days.	Rain. Inches.	Snow. No. of days.	Snow. Inches.	Wind. Resultant. Direction.	Resultant. Velo'y.	Mean Velocity
	°	°	°	°	°					°		
1840	59.8	— 1.6	79.9	36.7	43.2	11	4.860	...	...	...	...	...
1841	65.6	+ 4.2	93.1	45.3	47.8	9	1.560	...	...	...	...	0.36 lbs
1842	55.6	— 5.8	80.2	28.1	52.1	15	5.755	...	...	...	...	0.31
1843	58.4	— 3.0	88.3	28.2	55.1	12	4.595	...	...	...	...	0.27
1844	59.9	— 1.5	83.3	33.2	50.1	9	3.535	...	...	...	...	0.19
1845	61.0	— 0.4	84.6	38.5	46.1	11	3.715	...	...	...	...	0.27
1846	63.3	+ 1.9	84.2	39.1	45.1	10	1.920	...	...	...	...	0.32
1847	58.4	— 3.0	77.8	36.7	41.1	14	2.625	...	...	...	...	0.30
1848	62.9	+ 1.5	92.0	37.4	54.6	8	1.810	...	...	N 61 W	1.90	4.51mls
1849	63.2	+ 1.8	84.4	35.2	49.2	7	2.020	...	...	S 71 E	0.49	3.32
1850	64.3	+ 2.9	85.6	34.2	51.4	10	3.345	...	...	S 60 W	0.38	4.54
1851	59.2	— 2.2	79.2	37.0	42.2	11	2.695	...	...	S 2 W	1.26	4.42
1852	60.8	— 0.6	86.1	37.2	48.9	10	3.160	...	...	S 76 W	1.49	4.09
1853	65.5	+ 4.1	89.5	39.2	50.3	9	1.550	...	...	N 1 W	0.10	3.73
1854	64.1	+ 2.7	92.5	36.2	57.3	9	1.460	...	...	N 24 E	0.71	4.15
1855	59.9	— 1.5	91.5	36.2	55.3	17	4.070	...	...	N 69 W	1.33	5.70
1856	62.1	+ 0.7	89.2	42.0	47.2	13	3.200	...	...	S 21 W	0.90	5.30
1857	56.9	— 4.5	76.0	35.0	41.0	21	5.060	...	...	N 49 W	1.15	7.69
1858	66.2	+ 4.8	90.2	42.5	47.7	12	2.943	...	...	S 20 E	0.25	5.53
1859	58.3	— 3.1	86.4	32.2	54.2	16	4.085	2	inap	N 77 W	1.95	7.19
1860	63.2	+ 1.8	81.6	49.2	32.4	14	2.136	...	...	N 44 W	3.13	7.61
1861	61.3	— 0.1	87.8	41.6	46.2	13	2.329	...	...	N 39 W	2.29	6.11
1862	60.5	— 0.9	85.4	39.4	46.0	10	1.007	...	...	N 26 W	1.77	5.98
1863	60.1	— 1.3	84.8	37.4	47.4	13	1.662	...	...	N 50 W	2.26	5.24
1864	63.0	+ 1.6	93.4	34.8	58.6	5	0.570	...	...	N 55 W	1.72	4.53
1865	64.5	+ 3.1	90.2	43.0	47.2	7	2.005	...	...	S 30 W	0.60	4.06
1866	60.2	— 1.2	90.5	40.0	50.5	15	2.720	...	...	S 15 W	0.71	5.09
1867	64.3	+ 2.9	88.6	44.0	44.6	8	0.885	...	...	S 84 E	0.48	4.13
Result's to 1866.	61.41	...	86.03	37.57	48.46	11.52	2.829	...	...	N 65 W	0.87	5.19
Excess for '67	+ 2.89	...	+ 2.57	+ 6.43	— 3.86	— 3.52	— 1.944	...	...	...	...	— 1.06

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—JULY, 1867.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17 *min.* 33 *sec. West.* *Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.				Rain in inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 PM	M'N.		6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M		6 A.M.	2 P.M.	10 PM	Res'l-tant.	MEAN	
					°	°	°	°	°												°					
1	29.563	29.598	—	—	62.7	73.5	—	—	—	.389	.373	—	—	69	45	—	—	N b E	S	N W b N	N 64 E	8.2	5.0	6.7	1.02	5,00	...
2	.618	.599	29.539	29.5803	62.7	75.3	67.4	68.45	+ 3.45	.384	.363	.520	.426	67	41	78	63	N N W	S	Calm	S 8 W	1.0	6.5	0.0	2.76	3.12	...
3	.563	.502	.442	.4910	65.9	85.4	73.8	76·90	+11.75	.540	.623	.546	.588	85	50	65	65	Calm	S W b S	Calm	S 36 W	0.0	8.0	0.0	2.15	2.59	Inap.
4	.430	.401	.475	.4365	69.5	78.5	69.5	71.95	+ 6.65	.575	.666	.561	.598	79	68	77	76	N W b N	N W b W	E N E	N 65 E	9.0	4.0	10.0	2.78	4.68	.225
5	.531	.481	.368	.4492	61.6	65.2	65.2	63.82	— 1.57	.441	.484	.510	.487	81	77	81	82	E	E	E b N	N 84 E	4.6	6.0	6.5	5.59	5.60	.120
6	.318	.383	.506	.4002	65.2	77.8	66.3	70.80	+ 5.20	.523	.521	.445	.518	85	55	68	69	Calm	N W b N	W N W	N 46 W	0.0	19.0	6.6	5.92	6.38	.070
7	.479	.505	—	—	68.1	75.3	—	—	—	.511	.299	—	—	75	34	—	—	Calm	W N W	W N W	N 70 W	0.0	24.4	2.0	7.09	7.48	Inap.
8	.720	.689	.698	.6918	58.1	72.0	61.9	63.75	— 2.03	.336	.368	.353	.353	70	47	64	61	Calm	S	Calm	S 45 W	0.0	5.5	0.0	0.89	2.95	.370
9	.691	.701	.729	.7070	55.8	68.1	58.0	60.80	— 5.18	.365	.433	.337	.378	82	62	70	71	Calm	S S W	Calm	S 5 W	0.0	4.4	0.0	0.80	2.33	...
10	.800	.697	.596	.6865	58.7	68.1	63.4	63.75	— 2.33	.361	.471	.444	.418	74	68	76	71	W	S	S	S 20 W	0.2	8.2	3.5	5.11	5.31	Inap.
11	.472	.446	.480	.4680	65.2	74.2	69.5	69.22	+ 3.03	.497	.584	.494	.530	80	68	68	74	S S W	S W b S	N b W	S 89 W	9.2	8.0	5.0	3.97	6.15	.005
12	.561	.641	.698	.6337	61.6	67.7	55.1	62.02	— 4.28	.347	.324	.320	.356	63	48	74	64	N W b N	N W b N	N	N 14 W	6.2	8.0	11.5	9.10	9.39	...
13	.815	.885	.865	.8702	55.8	65.6	55.8	60.08	— 6.30	.268	.292	.268	.277	60	47	60	54	N b E	S	S	S 52 E	3.8	7.5	2.2	2.47	4.57	...
14	.935	.906	—	—	57.3	69.2	—	—	—	.302	.353	—	—	64	49	—	—	N E	E b S	E b N	N 87 E	3.5	10.5	6.3	6.22	6.43	...
15	.771	.657	.611	.6628	61.6	69.5	64.1	65.85	— 0.60	.456	.479	.525	.507	84	65	87	80	E N E	E	N W b N	N 7 W	1.5	9.0	7.2	2.64	7.78	1.100
16	.683	.713	.747	.7197	57.2	72.4	57.8	62.33	— 4.25	.337	.249	.328	.322	71	31	68	58	N W	N N W	N b W	N 33 W	12.4	10.2	5.6	5.45	6.47	...
17	.813	.773	.769	.7907	60.9	69.9	61.9	64.85	— 1.83	.366	.460	.285	.388	69	63	51	62	N b W	S b W	N b W	N 25 W	2.4	3.0	5.2	1.61	3.91	...
18	.799	.761	.758	.7655	61.6	75.7	64.1	68.33	+ 1.65	.405	.305	.435	.380	74	34	73	58	N	N b E	E	N 1 W	6.6	10.6	0.4	4.94	6.02	...
19	.798	.747	.719	.7522	59.4	69.5	62.3	64.95	— 1.83	.366	.479	.383	.407	71	66	68	65	N E b E	S	S S W	S 68 E	6.0	6.8	0.8	0.63	3.64	...
20	.776	.707	.637	.6992	63.4	71.7	69.1	68.48	+ 1.72	.417	.531	.369	.435	71	68	52	62	N b W	S W b S	N b W	N 25 W	4.8	6.0	4.2	2.76	5.48	...
21	.578	.507	—	—	67.0	82.1	—	—	—	.434	.538	—	—	65	49	—	—	N N W	N N W	N W	N 24 W	9.0	14.8	8.1	10,80	11.01	...
22	.426	.420	.464	.4396	70.2	83.9	74.6	77.13	+10.27	.431	.541	.466	.478	58	46	55	51	N W b N	S W b S	N N W	N 32 W	12.2	8.6	3.2	4.32	6.20	...
23	.530	.528	.524	.5308	68.4	86.8	74.6	76.55	+ 9.67	.520	.586	.580	.536	75	45	67	59	Calm	S b W	Calm	S 20 W	0.0	6.2	0.0	2.31	2.52	...
24	.542	.489	.486	.5057	70.2	90.8	76.4	80.45	+13.58	.580	.597	.583	.584	78	41	63	58	S W b S	W N W	W N W	S 83 W	0.6	11.5	3.8	3.71	4.44	...
25	.488	.441	.406	.4363	73.1	77.1	69.2	73.55	+ 6.55	.667	.623	.636	.632	81	66	89	77	Calm	S W b W	Calm	S 76 W	0.0	5.2	0.0	1.79	1.96	Inap.
26	.436	.472	.536	.4863	69.2	74.2	68.8	70.97	+ 4.00	.607	.570	.557	.580	85	67	79	76	W b N	S S E	Calm	S 55 E	1.2	5.2	0.0	2.06	2.60	...
27	.559	.487	.446	.4952	67.0	78.2	74.9	74.62	+ 7.63	.553	.560	.729	.618	83	58	84	72	S E	E b S	S W b S	S 50 E	2.5	7.2	3.8	2.31	3.80	...
28	.400	.292	—	—	74.2	82.9	—	—	—	.739	.705	—	—	88	62	—	—	S W	S S W	Calm	S 62 W	5.0	19.6	0.0	6.02	8.92	Inap.
29	.470	.625	.717	.6127	68.4	69.1	55.8	64.33	— 2.62	.379	.294	.300	.310	55	40	67	53	N W b W	N W	N N W	N 41 W	15.0	24.2	2.0	12.90	13.29	...
30	.777	.799	.777	.7852	56.9	72.4	58.7	63.68	— 3.27	.341	.363	.327	.337	73	46	67	59	N N W	S b W	Calm	S 13 W	9.5	9.0	0.0	2.13	4.56	...
31	.765	.647	.550	.6432	58.0	71.7	66.3	68.10	— 0.85	.416	.422	.522	.464	86	55	80	73	E b S	E b S	E	S 56 E	2.5	9.5	2.0	3.54	4.25	.065
M	29.6210	29.6085	29.5978	29.6054	63.29	74.26	65.56	68.22	+ 1.97	.441	.469	.455	.458	75	55	70	66					4.42	9.41	3.44	...	5.45	1.965

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JULY, 1867.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 29.935 at 6 a.m. on 14th. } Monthly range—
Lowest Barometer . . . . . 29.292 at 2 p.m. on 28th. } 0.643.

Self-registering Ther.

Maximum temperature . . . . . 94°0 on 24th. } Monthly range—
Minimum temperature . . . . . 48°2 on 10th. } 45°8

Mean maximum temperature . . . . . 77°63 } Mean daily range—
Mean minimum temperature . . . . . 58°45 } 19°18

Greatest daily range . . . . . 29°2 from a.m. to p.m. of 3rd.
Least daily range . . . . . 7°1 from a.m. to p.m. of 5th.

Warmest day . . . . 24th...Mean temperature . . . 80°45 } Difference—20°37.
Coldest day . . . . 13th...Mean temperature . . . 60°08 }

Maximum Solar Radiation . . . . . 135°0 on 24th } Monthly range—96°4
Terrestrial . . . . . 38°6 on 8th }

Aurora observed on 3 nights, viz.: 21st, 28th, and 29th.
Possible to see aurora on 22 nights; impossible on 9 nights.
Raining on 12 days; depth, 1.965; duration of fall, 21.5 hours.
Mean of cloudiness—0.48.
Most cloudy hour observed, 2 p.m.; mean, 0.58; least cloudy hour observed, 6 a.m.; mean, 0.42.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South	East.	West.
1792.15	1024.52	806.22	1509.51

Resultant direction, N. 42° W.: Resultant Velocity, 1.18.
Mean velocity, 5.45 miles per hour.
Maximum velocity, 26.2 miles, from noon to 1 p.m. of 29th.

Most windy day, 29th; mean velocity, 13.29 miles per hour
Least windy day, 25th; mean velocity, 1.96 miles per hour } Difference, 11.33 miles.

Most windy hour, 1 p.m.; mean velocity, 9.20 miles per hour.
Least windy hour, 1 a.m.; mean velocity, 3.03 miles per hour. } Difference, 6.17 miles.

4th July. Thunder storm. 8th. Solar halo. 10th. Solar halo; rainbow at 5 p.m. 21st. Rainbow at 7.30 p.m. 28th. Thunder storm.

Fog recorded on 7th, 9th, 13th, and 27th. Dew recorded on 7 occasions. Lightning recorded on 3rd, 5th, 8th, 10th, 11th, 21st and 28th. Grasshoppers very numerous. Dragon flies very numerous.

COMPARATIVE TABLE FOR JULY, 1867.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum	Minimum.	Range.	RAIN. No. of days	Inches.	SNOW. No. of days	Inches.	WIND. Resultant. Direction.	V'locity.	Mean Velocity.
	°	°	°	°	°					°		
1840	65.8	— 1.2	82.3	47.0	35.3	6	5.270	...	...	...	...	...
1841	65.0	— 2.0	89.0	39.9	49.1	10	8.150	...	...	...	...	0.27 lbs.
1842	64.7	— 2.3	91.0	42.5	48.5	4	3.050	...	...	...	...	0.33
1843	64.5	— 2.5	86.8	38.7	48.1	8	4.605	...	...	...	...	0.44
1844	66.0	— 1.0	86.6	40.1	46.5	12	2.815	...	...	...	...	0.19
1845	66.2	— 0.8	95.0	45.7	49.3	7	2.195	...	...	...	...	0.30
1846	68.0	+ 1.0	94.6	44.5	50.1	9	2.895	...	...	...	...	0.29
1847	68.0	+ 1.0	87.0	43.2	43.8	8	3.355	...	...	...	...	0.19
1848	65.5	— 1.5	82.2	44.1	38.1	10	1.890	...	...	N 14 W	0.18	4.94 mls
1849	68.4	+ 1.4	88.6	45.2	43.4	4	3.415	...	...	S 5 W	0.75	3.52
1850	68.9	+ 1.9	86.2	51.6	34.6	12	5.270	...	...	N 81 E	0.59	4.56
1851	65.0	— 2.0	82.7	46.5	36.2	12	3.625	...	...	N 60 W	0.88	4.13
1852	66.8	— 0.2	90.1	48.5	41.6	8	4.025	...	...	N 43 W	0.93	3.33
1853	65.6	— 1.4	91.3	41.6	49.7	10	0.915	...	...	S 58 E	0.24	3.69
1854	72.5	+ 5.5	98.0	42.5	55.5	9	4.805	...	...	S 49 W	0.37	4.03
1855	67.9	+ 0.9	92.8	49.2	43.6	13	3.245	...	...	S 19 W	0.73	6.47
1856	69.9	+ 2.9	96.6	49.5	47.1	8	1.120	...	...	N 79 W	1.57	5.84
1857	67.8	+ 0.8	86.6	47.0	39.6	15	3.475	...	...	S 68 E	0.81	4.74
1858	67.9	+ 0.9	85.0	52.0	33.0	13	3.072	...	...	N 15 E	1.13	5.76
1859	66.9	— 0.1	88.0	44.7	43.3	12	2.611	...	...	N 56 W	1.48	5.81
1860	63.9	— 3.1	88.0	43.8	44.2	13	4.336	...	...	N 60 W	2.15	7.29
1861	65.4	— 1.6	84.5	47.0	37.5	16	2.635	...	...	N 74 W	1.43	4.66
1862	66.7	— 0.3	95.5	48.2	47.3	15	5.344	...	...	S 89 W	1.42	5.80
1863	67.6	+ 0.6	83.5	48.0	35.5	15	3.405	...	...	N 18 W	0.40	3.89
1864	69.7	+ 2.7	90.2	49.0	41.2	8	1.332	...	...	N 61 W	2.23	6.00
1865	65.0	— 2.0	83.0	45.8	37.2	11	2.470	...	...	N 86 W	2.28	5.34
1866	70.4	+ 3.4	94.0	47.8	46.2	16	5.390	...	...	S 79 W	0.94	4.17
1867	68.2	+ 1.2	94.0	48.2	45.8	12	1.965	...	...	N 42 W	1.13	5.45
Results to 1866	67.04	.....	88.86	45.69	43.17	10.52	3.508	...	...	N 71 W	0.72	4.95
Exc. for 1867.	+1.16	.....	+5.14	+2.51	+2.63	+ 1.48	— 1.543	...	...	...	..	+ 0.50

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—AUGUST, 1867.

Latitude—43° 39′4 *North*. *Longitude*—5*h*. 17*m*. 33*s*. *West*. *Elevation above Lake Ontario*, 108 *feet*.

Day.	Barom. at temp. of 32°				Temp. of the Air.				Excess of Mean above Normal.	Tens. of Vaponr.				Humidity of Air.				Direction of Wind.			Resul't. Direc-tion.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M	MN'N		6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Re-sult'.	M'N.		
					°	°	°	°	°												°							
1	29.511	29.498	29.420	29.4697	64.8	85.2	67.0	66.16	— 0.82	.503	.550	.594	.553	81	88	89	86	S	S S W	S E E	S 4 E	4.5	5.0	2.8	3.51	3.80	0.145	...
2	.433	.455	.541	.4837	62.3	73.8	64.1	67.10	+ 0.25	.521	.449	.473	.466	93	54	78	71	Calm.	N N W	N W b N	N 40 W	0.0	7.6	8.0	5.10	5.67	...	...
3	.642	.675	.729	.6905	59.4	71.0	60.9	64.37	— 2.48	.398	.432	.276	.372	79	57	51	61	N W b N	S b W	Calm.	N 45 W	3.5	7.5	0.0	1.87	3.67	...	...
4	.813	.761	—	.—	59.8	78.5	—	—	—	.381	.497	—	.—	74	51	—	—	Calm.	S	Calm.	S 15 W	0.0	11.6	0.0	4.00	4.15	...	...
5	.806	.767	.765	.7800	65.9	84.3	68.8	73.97	+ 7.17	.500	.602	.501	.585	78	51	72	69	S W b W	S b W	Calm.	S 31 W	0.8	3.6	0.0	1.10	2.21	insp.	...
6	.751	.782	.724	.7413	65.9	73.1	68.1	70.42	+ 3.65	.567	.527	.637	.612	89	64	93	83	Calm.	N N W	Calm.	S 37 W	0.0	11.2	0.0	1.17	1.94	.760	...
7	.767	.727	.695	.7245	67.4	79.2	72.0	73.60	+ 6.92	.617	.487	.584	.593	91	49	75	73	Calm.	Calm.	Calm.	S 33 W	0.0	0.0	0.0	0.22	0.23	...	...
8	.716	.654	.630	.6668	67.4	82.1	72.0	75.03	+ 8.37	.603	.617	.556	.604	90	56	70	70	Calm.	S S E	Calm.	S 3 E	0.0	4.4	0.0	1.03	1.12	...	...
9	.629	.605	.567	.5956	68.1	85.0	72.4	75.75	+ 9.24	.637	.675	.697	.682	93	56	88	78	Calm.	S	Calm.	S 8 E	0.0	5.5	0.0	1.83	2.85	...	...
10	.662	.722	.799	.7338	70.2	80.0	67.4	72.53	+ 6.02	.523	.352	.363	.408	71	34	54	53	N W b N	N W b N	N	N 19 W	11.4	11.0	7.6	10.63	10.98	...	...
11	.853	.839	—	.—	61.9	74.2	—	—	—	.365	.403	—	.—	66	48	—	—	N	S S E	Calm.	S 39 E	4.8	10.0	0.0	1.89	3.33	...	...
12	.679	.500	.380	.5003	59.8	78.9	68.1	70.78	+ 4.45	.381	.522	.551	.519	74	53	80	69	N W	S b S	Calm.	S 7 E	0.8	10.6	0.0	3.11	4.08	.220	...
13	.287	.356	.460	.3760	65.6	76.4	64.5	68.08	+ 2.03	.571	.599	.467	.540	91	66	76	78	N b E	N W b N	N N W	N 32 W	0.5	9.6	3.0	4.84	4.93	insp.	...
14	.565	.638	.693	.6288	60.9	75.3	64.1	67.98	+ 1.73	.426	.524	.499	.493	73	60	83	73	N N W	S b W	Calm	N 40 W	1.0	4.2	0.0	1.29	3.83	...	...
15	.729	.752	.715	.7337	61.6	75.3	65.6	68.68	+ 2.53	.381	.324	.327	.343	69	37	51	50	N	S E b S	N b E	N 56 E	7.4	8.0	5.0	3.44	5.83	...	...
16	.669	.566	.526	.5760	61.0	78.9	69.9	70.68	+ 4.63	.354	.394	.397	.382	66	39	54	51	N	E b S	N N W	N 22 E	7.2	3.6	7.2	4.85	5.92	...	...
17	.488	.427	.358	.4243	64.5	81.4	72.4	72.95	+ 6.98	.379	.596	.523	.503	62	56	65	61	N b W	S b E	S S W	S 15 W	4.2	6.6	4.6	3.68	4.81	...	...
18	.367	.316	—	.—	65.6	98.3	—	—	—	.492	.317	—	.—	77	20	—	—	W S W	W	N W b N	N 80 W	1.0	22.0	10.5	8.03	9.27	...	...
19	.557	.597	.634	.5997	62.3	70.2	61.9	64.69	— 1.13	.408	.380	.401	.395	73	51	72	66	N N W	W	N W	N 73 W	6.0	14.5	4.0	6.52	6.70	...	...
20	.693	.663	.631	.6557	56.2	72.8	65.2	66.05	+ 0.54	.305	.531	.458	.462	79	65	73	71	Calm.	S S W	N	N 85 W	0.0	7.4	11.6	0.99	4.15	...	...
21	.655	.615	.585	.6200	59.0	74.2	62.3	66.66	+ 1.25	.439	.485	.434	.456	88	57	77	70	Calm.	S S E	Calm.	S 43 E	0.0	9.2	0.0	1.68	3.14	...	...
22	.605	.550	.513	.5485	58.3	74.2	63.7	67.63	+ 2.28	.401	.443	.452	.454	82	52	76	68	Calm.	S S E	Calm.	N 87 E	0.0	8.4	0.0	2.72	3.37	...	...
23	.488	.426	.398	.4337	60.9	76.7	69.2	70.02	+ 4.88	.441	.522	.636	.548	82	56	89	75	N E b N	S E b E	N N W	S 26 E	1.7	7.0	1.0	0.83	4.75	.040	...
24	.468	.511	.649	.5570	61.6	76.4	58.7	65.32	+ 0.37	.389	.335	.327	.350	69	36	67	57	N W b W	N W	N N W	N 37 W	3.0	14.4	10.5	9.59	9.77	...	...
25	.747	.763	—	.—	53.3	74.2	—	—	—	.312	.325	—	.—	76	38	—	—	Calm.	S b W	S W	S 12 W	0.0	7.8	0.9	2.84	3.08	...	...
26	.772	.713	.651	.7073	54.4	77.5	68.1	67.08	+ 2.53	.287	.467	.510	.422	67	49	75	63	Calm.	S E b E	E N E	S 68 E	0.0	2.6	0.4	1.09	1.75	...	...
27	.611	.497	.395	.4892	65.2	78.9	75.3	73.97	+ 9.66	.563	.679	.614	.643	90	68	70	77	N b W	S E b S	S S W	S 3 W	0.4	7.6	6.5	4.20	5.23	.210	...
28	.304	.294	.458	.3533	68.1	81.4	59.8	70.05	+ 5.92	.622	.547	.258	.502	91	51	69	69	Calm.	W b S	Calm.	N 73 W	0.0	11.6	0.0	5.74	6.77	.010	...
29	.541	.495	.597	.5553	53.6	68.8	52.9	58.27	— 5.57	.319	.275	.300	.310	78	38	76	65	Calm.	N W b W	N W b W	N 78 W	0.0	12.6	3.5	3.85	4.36	.105	...
30	.693	.771	.795	.7600	47.5	63.0	48.2	53.22	—10.42	.270	.227	.287	.264	84	39	85	68	W N W	W N W	Calm	N 58 W	2.2	7.2	0.0	3.32	4.82	...	...
31	.737	.570	.486	.5840	45.4	64.1	57.3	57.25	— 6.07	.243	.360	.438	.359	80	60	93	76	Calm.	S W b S	Calm.	S 19 W	0.0	8.4	0.0	3.13	3.71	.950	...
M	29.6096	29.5843	29.5850	29.5929	61.38	75.49	65.18	68.09	+ 2.33	.448	.478	.469	.475	80	53	74	68	.....	.....	.....	N 76 W	1.95	8.41	2.81	...	4.52	2.440	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR AUGUST, 1867.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....29 839 at 6 a.m. on 11th } Monthly range=
Lowest Barometer .....29 287 at 6 a.m. on 13th } 0.552 inches.

Self-registering Ther.
- Maximum Temperature .....95°2 on 18th } Monthly range=
- Minimum Temperature .....42°2 on 30th } 53°.0
- Mean Maximum Temperature.....78°73 } Mean daily range=
- Mean Minimum Temperature.....58°85 } 19°88
- Greatest daily range .....31°7 from a.m. to p.m. of 18th.
- Least daily range .....10°2 from a.m. to p.m. of 1st.

Warmest day.....9th...Mean Temperature .....75°75 } Difference=22°53
Coldest day ....Mean Temperature .....53°22 }
Maximum } Solar .....134°0 on 18th } Monthly range=
Radiation. } Terrestrial... ..... 32°0 on 31st } 102°0

Aurora observed on 4 nights, viz.: 3rd, 5th, 21st, and 30th.
Possible to see Aurora on nights: impossible on nights.
Snowing on days; depth inches; duration of fall hours.
Raining on 10 days; depth 2.440 inches; duration of fall 34.7 hours.
Mean of Cloudiness=0.50.
Most cloudy hour observed 4 p.m.; Mean=0.58; least cloudy hour observed 12 p.m.; Mean=0.39

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1367.94	1147.56	429.67	1332.22

Resultant Direction N. 7° W.; Resultant Velocity 1.25
Mean Velocity 4.52 miles per hour.
Maximum Velocity 21.4 miles, from 2 to 3 p.m. of 18th.
Most Windy day 10th; Mean Velocity 10.98 miles per hour. } Difference 10.75 miles.
Least Windy day 7th; Mean Velocity 0.23 do }
Most Windy hour 2 p.m.; Mean Velocity 8.20 do } Difference 6.38 miles.
Least Windy hour 5 a.m.; Mean Velocity 1.82 do }

1st, Lightning at 10 p.m. 3rd, Very chilly.
5th, Hot and close; Thunder storm. 6th, Thunder storm.
9th, Hot and oppressive; incessant Lightning at night.
18th, Very hot; equally scorching Wind.
23rd, Thunder storm at night.
26th, Thunder storm during night. 27th, Night very oppressive.
31st, Solar halo.

COMPARATIVE TABLE FOR AUGUST.

Year.	Temperature. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	Rain. No. of days.	Rain. Inches.	Snow. No. of days.	Snow. Inches.	Wind. Resultant. Direction.	Wind. Resultant. Velo'y	Wind. Mean Force or Velocity
	°	°	°	°	°					°		
1840	64.7	— 1.3	82.4	47.7	34.7	12	2.965	...	...	...	...	...
1841	64.4	— 1.6	84.8	45.7	39.1	9	6.170	...	...	...	...	0.19 lbs
1842	65.7	— 0.3	81.8	43.9	37.9	6	2.500	...	...	...	...	0.30
1843	66.4	+ 0.4	83.1	44.0	39.1	4	4.850	...	...	...	...	0.12
1844	64.3	— 1.7	86.8	43.5	43.3	17	imper.	...	...	...	...	0.16
1845	67.9	+ 1.9	84.8	41.5	43.3	9	1.725	...	...	...	...	0.19
1846	68.4	+ 2.4	86.4	49.5	36.9	9	1.770	...	...	...	...	0.17
1847	65.1	— 0.9	82.6	44.6	38.0	10	2.140	...	...	...	...	0.19
1848	69.2	+ 3.2	87.0	48.7	38.3	8	0.855	...	...	S 21 E	0.98	4.55mls.
1849	66.3	+ 0.3	79.0	49.0	30.0	10	4.970	...	...	N 71 W	0.60	3.76
1850	66.8	+ 0.8	85.0	41.0	44.0	13	4.355	...	...	N 15 E	0.35	4.46
1851	63.6	— 2.4	79.8	42.0	37.8	10	1.360	...	...	N 63 W	0.40	4.63
1852	65.9	— 0.1	81.2	45.8	35.4	9	2.695	...	...	N 70 W	0.56	3.30
1853	68.6	+ 2.6	94.9	42.5	52.4	11	2.575	...	...	S 36 E	0.30	4.26
1854	68.0	+ 2.0	99.2	45.6	53.6	5	0.455	...	...	N 64 W	1.76	4.60
1855	64.1	— 1.9	83.5	40.0	43.5	7	1.455	...	...	N 63 W	1.04	6.97
1856	63.6	— 2.4	82.7	41.5	41.2	12	1.680	...	...	N 50 W	2.88	7.03
1857	65.3	— 0.7	88.2	46.0	42.2	13	5.265	...	...	N 77 W	1.51	6.36
1858	67.6	+ 1.6	84.0	44.0	40.0	11	3.890	...	...	N 69 W	1.57	6.50
1859	66.6	+ 0.6	82.2	45.8	36.4	11	3.900	...	...	N 36 W	1.62	5.96
1860	64.5	— 1.5	87.0	46.8	40.2	14	3.405	...	...	N 70 W	1.83	5.80
1861	65.5	— 0.5	85.2	47.0	38.2	15	2.953	...	...	N 8 E	0.46	4.21
1862	67.6	+ 1.6	89.5	42.8	46.7	15	3.483	...	...	N 78 W	1.67	5.96
1863	66.6	+ 0.6	88.0	42.4	45.6	12	2.208	...	...	S 61 W	1.80	4.89
1864	68.6	+ 2.6	94.0	47.0	47.0	16	5.060	...	...	N 70 W	1.38	4.75
1865	65.2	— 0.8	87.8	44.4	43.4	8	1.990	...	...	N 60 W	1.55	5.07
1866	60.8	— 5.2	77.0	42.4	34.6	14	4.457	...	...	N 59 W	2.58	5.16
1867	68.1	+ 2.1	95.2	42.2	53.0	10	2.440	...	...	N 76 W	1.25	4.52
Results to 1866.	65.97	...	85.48	44.63	10.85	10 7	3.045	...	...	N 66 W	1.05	5.17
Excess for 1867.	+ 2.13	...	+ 9.72	— 2.43	+ 12.15	— 0 7	— 0.605	...	...	...	...	— 0.65

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—SEPTEMBER, 1867.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17m. 33s. *West.* *Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	M'N		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'.	-M'N.		
					°	°	°	°	°												°							
1	29.426	29.536	—	—	58.0	60.5	—	—	—	.452	.360	—	—	94	68	—	—	N b E	N b W	N N W	N 10 W	4.2	11.2	5.5	8.32	8.38	...	...
2	.718	.687	29.638	29.6785	44.6	61.2	59.0	55.73	— 7.00	.235	.362	.415	.343	80	67	83	76	N	N	N	N 81 E	4.6	7.2	3.8	4.09	4.43	...	...
3	.600	.529	.580	.5756	55.1	67.7	56.9	60.07	— 2.37	.398	.465	.419	.440	91	68	90	85	Calm.	S W	S W b W	S 41 W	0.0	7.0	1.5	3.43	3.93	0.170	...
4	.693	.674	.665	.6758	50.8	65.5	58.3	59.28	— 2.85	.313	.389	.367	.363	84	62	75	72	W b N	S E b S	S	S 79 E	2.0	3.0	1.0	1.41	2.81	...	...
5	.610	.552	.478	.5352	55.4	71.0	64.5	63.70	+ 1.87	.394	.541	.546	.496	89	71	90	84	N E b N	N b S	N E b E	S 87 E	2.2	2.0	2.0	2.58	3.15	.010	...
6	.422	.515	.742	.5817	66.6	62.7	52.9	60.90	— 0.53	.545	.389	.213	.368	83	68	52	65	S W b S	N N W	N W b N	N 41 W	5.0	16.0	5.2	6.26	9.02	.010	...
7	.875	.934	.971	.9348	51.1	65.5	54.0	57.23	— 3.92	.320	.329	.282	.318	85	52	67	69	N	S E b S	Calm.	N 78 E	7.0	10.4	0.0	3.37	5.00	...	...
8	.975	.864	—	—	50.8	64.5	—	—	—	.262	.442	—	—	70	73	—	—	N b E	N	N	N 82 E	5.8	9.5	2.1	4.51	4.87	...	...
9	.682	.493	.552	.5758	62.7	73.8	57.6	64.53	+ 4.18	.530	.574	.353	.482	93	68	74	78	S	S b W	N W b W	S 85 W	1.8	12.4	13.5	5.02	8.62	.191	...
10	.631	.693	.745	.7008	51.5	61.6	46.4	53.42	— 6.63	.339	.191	.212	.241	92	34	66	61	W N W	N W b N	Calm.	N 34 W	4.4	10.0	0.0	5.52	5.73	...	...
11	.760	.674	.623	.6782	40.3	66.6	58.3	55.55	— 4.10	.228	.314	.355	.301	91	48	73	69	Calm.	S b W	S W b S	S 18 W	0.0	15.4	3.0	5.34	5.47	...	...
12	.568	.494	.505	.5098	47.5	73.1	62.3	62.18	+ 2.95	.294	.393	.432	.399	89	48	76	72	Calm.	S S W	S W b W	S 30 W	0.0	15.6	1.0	6.27	6.32	...	...
13	.416	.436	.639	.5140	58.3	62.3	53.6	57.37	— 1.48	.448	.446	.319	.389	92	79	78	81	Calm.	N W b N	N N W	N 33 W	0.0	15.0	9.0	5.43	7.47	.355	...
14	.888	.925	.947	.9278	41.4	53.6	48.2	48.40	— 9.93	.178	.194	.245	.209	67	47	72	62	N E b N	S E b E	E N E	S 81 E	5.6	7.0	2.5	4.81	5.52	...	...
15	.921	.851	—	—	53.8	61.9	—	—	—	.295	.342	—	—	71	67	—	—	E S E	S b N	Calm.	S 85 E	5.8	4.8	0.0	3.06	3.32	...	...
16	.789	.739	.755	.7580	58.7	69.9	64.8	64.58	+ 7.07	.373	.642	.528	.508	75	88	86	82	Calm.	S S W	Calm.	S 28 W	0.0	8.4	0.0	1.29	1.29	.120	...
17	.808	.775	.785	.7910	64.5	83.2	69.9	72.12	+15.12	.586	.699	.656	.646	96	60	90	83	W S W	S S W	Calm.	S 26 W	1.6	11.8	0.0	1.82	1.86	...	...
18	.785	.658	.769	.7462	65.2	84.3	70.2	72.33	+15.72	.590	.684	.608	.638	95	58	83	81	Calm.	S W b S	N W b N	N 70 W	0.0	10.0	10.0	3.97	6.20	.280	...
19	.854	.826	.727	.7875	63.4	68.1	61.2	64.05	+ 7.93	.483	.498	.410	.464	82	73	76	78	N b W	S S E	Calm.	S 77 E	4.6	4.0	0.0	1.81	2.29	...	...
20	.596	.560	.819	.6700	61.2	69.9	52.6	61.57	+ 5.92	.524	.359	.342	.430	97	49	86	78	Calm.	N W b W	Calm.	N 68 W	0.0	32.0	0.0	6.25	7.60	.020	...
21	.875	.817	.816	.8302	50.0	67.0	51.1	56.93	— 1.82	.294	.397	.320	.328	81	59	85	72	Calm.	S b W	Calm.	S 78 W	0.0	5.0	0.0	0.76	1.75	...	...
22	.776	.673	—	—	52.6	63.4	—	—	—	.342	.344	—	—	86	59	—	—	N b W	W N W	N	N 40 W	0.7	19.8	8.9	5.72	8.42	...	...
23	30.055	30.092	30.057	30.0705	42.5	52.6	45.0	46.82	— 7.40	.199	.195	.221	.199	73	48	74	63	N N E	S S b E	Calm.	N 86 E	3.5	6.0	0.0	2.12	2.96	...	...
24	29.992	29.825	29.624	29.7895	41.7	64.1	59.4	57.33	+ 3.58	.218	.382	.434	.362	82	64	86	76	N E b N	S E	S W b S	S 17 W	0.5	7.0	2.2	2.72	3.60	...	...
25	.522	.670	.847	.6925	62.3	61.2	51.5	56.90	+ 3.67	.434	.230	.294	.290	77	42	77	62	W N W	N W	N	N 34 W	9.0	23.0	8.2	13.60	14.33	...	...
26	.882	.825	.774	.8186	39.6	55.8	43.9	47.52	— 5.22	.210	.196	.244	.223	87	43	86	70	N b E	N W b N	N N W	N 13 W	1.0	8.5	3.0	4.51	4.73	...	...
27	.740	.667	.613	.6665	37.4	57.6	47.9	49.57	— 2.65	.196	.308	.301	.287	87	64	90	80	N b W	S	S	S 85 W	0.5	8.0	1.5	2.14	3.49	...	...
28	.600	.502	.464	.5228	43.9	70.6	58.3	59.07	+ 7.23	.263	.401	.390	.370	92	58	80	75	Calm.	S S W	S W b S	S 26 W	0.0	12.0	5.0	5.22	5.49	...	...
29	.354	.538	—	—	50.8	54.7	—	—	—	.335	.233	—	—	90	53	—	—	N W b N	N	N b E	N 2 W	0.8	19.0	6.6	9.91	10.04	.070	...
30	.875	.821	.792	.8273	31.8	47.9	39.6	40.93	— 9.88	.130	.136	.150	.139	73	40	61	56	N N E	N W b W	N	N 23 W	4.0	7.8	7.2	3.77	4.94	...	...
M	29.7294	29.6949	29.7171	29.7143	51.50	65.47	55.50	57.92	+ 0.43	.349	.389	.362	.369	85	58	78	73	.....	.....	.....	.....	2.49	10.96	3.42	...	5.43	1.226	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR SEPTEMBER, 1867.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....30 117 at 11 a.m. on 23rd } Monthly range=
Lowest Barometer .....29 354 at 6 a.m. on 29th } 0.763 inches.

Self-registering Ther.
- Maximum Temperature .....87°0 on 18th } Monthly range=
- Minimum Temperature .....31°8 on 30th } 55°2.
- Mean Maximum Temperature.....68°75 } Mean daily range=
- Mean Minimum Temperature.....49°43 } 19°32
- Greatest daily range .....28°7 from a.m. to p.m. of 11th.
- Least daily range .....8°2 from a.m. to p.m. of 25th.

Warmest day.....18th...Mean Temperature.....72°33 } Difference=31°40
Coldest day .....30th...Mean Temperature.....40°93 }
Maximum Solar .....131°5 on 18th } Monthly range=
Radiation. Terrestrial... .....21°4 on 30th } 110°1

Aurora observed on 13 nights, viz.: 2nd, 6th, 13th, 17th, 19th, 20th, 21st, 22nd, 23rd, 25th, 26th, 28th and 29th.
Possible to see Aurora on 28 nights; impossible on 2 nights.
Snowing on days; depth inches; duration of fall hours.
Raining on 9 days; depth 1.226 inches; duration of fall 13.2 hours.
Mean of Cloudiness=0.29.
Most cloudy hour observed 8 a.m.; Mean=0.38; least cloudy hour observed midnight; Mean=0.14

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1844.98	996.36	744 30	1394 54

Resultant Direction N. 37° W.: Resultant Velocity 1.48
Mean Velocity 5.43 miles per hour.
Maximum Velocity 32.0 miles, from 1.30 to 2.30 p.m. of 20th.
Most Windy day 25th; Mean Velocity 14.33 miles per hour. } Difference 13.04 miles.
Least Windy day 16th; Mean Velocity 1.29 do }
Most Windy hour 1 p.m.; Mean Velocity 11.33 do } Difference 8.99 miles.
Least Windy hour midnight; Mean Velocity 2.34 do }
6th, Thunder storm.
11th, First frost of the season. 14th, First ice of the season. Solar halo.
14th. Lunar halo. 18th Thunder storm.
21st, Solar halo. 24th, Hoar frost.
25th, Thunder storm. 27th, Hoar frost. 30th, Hoar frost.
Lightning recorded on 3rd, 4th, 5th, 7th and 18th.
Fog recorded on 8 occasions during month Heavy dew on 9 occasions.

COMPARATIVE TABLE FOR SEPTEMBER.

Year.	Temperature. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	Rain. No. of days.	Rain. Inches.	Snow. No. of days.	Snow. Inches.	Wind. Resultant. Direction.	Resultant. Velo'y	Mean Velocity.
	°	°	°	°	°					°		
1840	54.0	— 4.0	73.6	30.2	43.4	4	1.380	...	...	...	...	...
1841	61.3	+ 3.3	80.2	34.2	46.0	9	3.340	...	...	...	...	0.26 lbs
1842	55.7	— 2.3	83.8	27.9	55.9	12	6.160	...	...	...	...	0.45
1843	59.1	+ 1.1	89.0	32.2	56.8	10	9.760	...	...	...	...	0.57
1844	58.6	+ 0.6	81.8	28.2	53.6	4	imper.	...	...	...	...	0.26
1845	56.0	— 2.0	79.6	34.0	45.6	16	6.245	...	...	...	...	0.34
1846	63.6	+ 5.6	84.3	37.3	47.0	11	4.595	...	...	...	...	0.33
1847	55.6	— 2.4	74.5	35.0	39.5	15	6.665	...	...	...	...	0.33
1848	54.2	— 3.8	80.4	28.1	52.3	11	3.115	...	...	N 71 W	2.38	5.81 mls
1849	58.2	+ 0.2	80.1	32.7	47.4	9	1.480	...	...	N 75 W	0.69	4.23
1850	56.5	— 1.5	76.0	29.5	46.5	11	1.735	...	...	S 65 W	1.02	4.78
1851	60.0	+ 2.0	86.3	32.0	54.3	9	2.665	...	...	N 14 E	1.03	5.45
1852	57.5	— 0.5	81.8	35.8	46.0	10	3.630	...	...	N 77 W	0.53	4.60
1853	58.8	+ 0.8	85.5	33.9	51.6	12	5.140	...	...	N	1.06	4.33
1854	61.0	+ 3.0	93.6	35.8	57.8	14	5.375	...	...	N 22 W	1.33	4.04
1855	59.5	+ 1.5	82.6	33.0	49.6	12	5.585	...	...	N 20 E	1.29	7.61
1856	57.1	— 0.9	78.4	35.0	43.4	13	4.105	...	...	S 79 W	1.96	6.53
1857	58.6	+ 0.6	82.0	34.1	47.9	11	2.640	...	...	N 68 W	1.61	5.55
1858	59.1	+ 1.1	81.4	35.6	45.8	8	0.735	...	...	S 74 W	1.53	5.69
1859	55.2	— 2.8	75.4	35.7	39.7	15	3.525	...	...	N 44 W	1.60	6.36
1860	55.3	— 2.7	75.8	28.7	47.1	14	1.959	...	...	N 71 W	2.63	5.79
1861	59.1	+ 1.1	78.8	37.1	41.7	17	3.607	...	...	N 71 W	1.39	4.81
1862	59.6	+ 1.6	79.4	39.0	40.4	9	2.344	...	...	N 59 W	1.07	5.11
1863	55.9	— 2.1	80.0	31.4	48.6	8	1.235	...	...	N 16 W	0.92	6.46
1864	56.4	— 1.6	73.0	37.8	35.2	11	2.508	...	...	N 38 W	1.89	7.06
1865	64.5	+ 6.5	90.5	42.0	48.5	12	2.450	...	...	S 56 E	0.47	4.12
1866	55.2	— 2.8	80.0	34.4	45.6	15	5.657	...	...	N 33 W	1.45	4.63
1867	57.9	— 0.1	87.0	31.8	55.2	9	1.226	...	...	N 37 W	1.48	5.43
Results to 1866.	57.99	...	81.03	33.78	47.30	11.19	3.755	...	...	N 55 W	1.08	5.42
Excess for 1867.	— 0.09	...	+ 5.97	— 1.93	+ 7.90	— 2.19	— 2.529	...	...	...	...	+ 0.01

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—OCTOBER, 1867

Latitude—43° 39'4 *North. Longitude*—5*h.* 17*m.* 33*s. West. Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resl't.	Velocity of Wind.					Rain in Inches.	Snow in inches.
	6. A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M	M'N		6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'.	M'N.		
					°	°	°	°	°																			
1	29.770	29.589	29.441	29.5873	32.7	60.9	51.8	49.63	— 0.78	.157	.277	.300	.249	85	51	78	68	N	S S W	Calm.	S 24 W	2.5	14.5	0.0	5.06	5.78	inap	...
2	.985	.212	.407	.3002	55.1	67.4	52.9	58.63	+ 8.72	.375	.353	.285	.338	86	52	71	68	S W b S	W	N W b N	N 83 W	4.0	14.0	11.0	8.10	10.26	.075	...
3	.582	.616	.652	.6260	45.4	52.6	40.3	45.32	— 4.22	.253	.131	.141	.171	83	33	56	57	N N W	N N W	N b W	N 11 W	5.6	3.0	3.5	4.79	5.90	...	...
4	.735	.702	.607	.6748	35.2	54.0	52.2	48.42	— 0.62	.164	.208	.358	.246	80	50	92	72	N	E	S E	S 88 E	6.0	11.8	11.6	8.22	9.18	1.070	...
5	.836	.397	.724	.5015	50.8	49.7	41.7	47.52	— 1.10	.356	.278	.210	.287	96	77	79	86	E b N	N W	N W	N 33 W	5.0	17.0	9.5	9.66	10.35	.095	...
6	.923	.968	—	—	38.1	53.3	—	—	—	.195	.139	—	—	85	33	—	—	N W	N W b N	N N W	N 26 W	1.4	17.6	1.7	7.87	7.94	...	...
7	30.150	30.130	30.113	30.1313	36.3	49.3	37.0	41.07	— 6.78	.151	.172	.176	.162	71	49	79	64	N b W	S	Calm.	N 43 E	7.0	2.6	0.0	0.45	2.24	...	...
8	30.057	29.912	29.762	29.8908	33.4	53.3	49.0	47.03	— 0.42	.163	.207	.256	.214	85	50	74	66	Calm.	S E	E S E	S 31 E	0.0	2.0	2.5	1.55	1.89	...	...
9	29.591	.322	.276	.3720	44.6	55.1	51.1	52.33	+ 5.27	.264	.353	.342	.336	90	82	91	85	E	S E b S	Calm.	S 6 W	0.6	9.0	0.0	5.82	7.27	.285	...
10	.161	.051	.134	.1132	55.5	52.6	47.5	51.50	+ 4.87	.381	.364	.255	.331	86	92	77	86	S S W	S W b S	Calm.	S 27 W	10.4	8.2	0.0	2.69	2.77	.340	...
11	.180	.261	.371	.2807	47.5	55.1	50.8	50.80	+ 4.57	.306	.331	.335	.329	93	76	90	88	Calm.	S E b S	N E b E	N 46 E	0.0	3.0	2.8	1.35	2.68	.005	...
12	.419	.500	.602	.5177	49.3	50.4	46.4	48.42	+ 2.45	.313	.299	.288	.297	89	81	91	87	N b W	N E	N E b E	N 23 E	5.4	4.0	0.5	2.77	3.03	.035	...
13	.615	.610	—	—	42.8	59.0	—	—	—	.240	.380	—	—	87	76	—	—	N W b N	W N W	W N W	N 65 W	10.0	16.5	2.8	7.93	8.02	...	...
14	.667	.633	.573	.6158	39.2	58.9	50.0	50.80	+ 5.53	.216	.293	.294	.280	90	58	81	76	N W b W	S b W	S W b W	S 59 W	7.5	7.4	1.0	4.09	5.09	...	...
15	.563	.615	.737	.6492	44.6	69.6	43.2	49.65	+ 4.80	.253	.241	.227	.239	86	46	81	69	W b S	N W	N b W	N 43 W	5.0	14.8	2.4	6 30	6.62	...	...
16	.806	.742	.686	.7398	39.0	60.1	52.2	51.03	+ 6.50	.183	.376	.369	.308	77	72	94	80	N b W	S E b E	Calm.	S 32 E	0.8	5.8	0.0	1.29	2.72	...	...
17	.642	.484	.467	.5218	53.3	66.3	62.7	60.82	+16.58	.387	.456	.441	.428	95	70	77	81	S W b W	S W b S	W	S 42 W	0.8	13.6	1.2	6.51	7.48	...	...
18	.514	.488	.542	.5168	54.0	71.3	55.5	59.98	+15.95	.367	.329	.337	.349	88	42	76	69	W	S W b S	S W	S 58 W	5.0	6.0	4.2	4.86	5.18	...	...
19	.781	.630	.710	.6463	56.2	68.8	59.0	61.03	+17.25	.394	.463	.323	.391	87	65	65	72	S W b S	S S W	N E b N	N 56 E	1.0	3.0	2.5	0.65	2.43	...	...
20	.779	.763	—	—	54.7	65.2	—	—	—	.403	.445	—	—	94	71	—	—	N E	E S E	N E	N 81 E	4.8	3.0	4.2	2.86	3.33	...	...
21	.717	.629	.606	.6440	55.1	68.4	59.1	60.75	+17.50	.398	.379	.443	.403	91	55	89	77	N E	S b W	S W b S	S 61 W	3.6	8.6	6.2	3.85	6.98	.030	...
22	.666	.752	.878	.7795	51.7	52.6	39.6	47.62	+ 4.65	.322	.219	.194	.255	84	54	78	76	W N W	N N W	Calm.	N 41 W	14.0	12.6	0.0	9.43	9.80	...	...
23	30.001	30.049	30.084	30.0497	36.0	49.0	40.7	41.24	— 1.53	.180	.205	.170	.182	85	59	66	71	N b W	S b W	N W b N	N 73 W	5.0	7.8	6.2	1.51	4.15	...	...
24	30.122	30.100	30.080	30.0995	33.4	51.5	43.5	42.62	+ 0.12	.157	.191	.194	.181	82	50	68	67	N W b N	S	S b W	S 18 W	3.2	8.6	4.8	3.41	4.04	...	...
25	30.084	30.052	30.012	30.0443	36.3	52.2	41.4	43.42	+ 1.13	.168	.232	.127	.174	78	59	48	60	W b S	S E b S	E b S	N 59 E	4.8	5.4	4.8	2.44	4.33	...	...
26	29.989	29.968	29.966	29.9782	38.9	53.3	40.7	44.33	+ 2.36	.168	.239	.180	.194	70	58	70	65	N b E	S	S	N 18 W	2.6	3.5	4.2	0.77	3.62	...	...
27	.991	.967	—	—	37.4	55.1	—	—	—	.179	.289	—	—	80	65	—	—	N b W	S E	N E	N 57 E	5.0	3.7	5.3	3.12	4.02	...	...
28	.944	.874	.842	.8877	46.8	52.6	49.0	49.33	+ 7.85	.264	.321	.326	.302	82	80	94	86	E N E	E b N	E N E	N 74 E	8.5	12.4	4.7	7.61	7.87	.035	...
29	.702	.617	.605	.6342	48.6	57.6	48.2	51.42	+10.15	.282	.235	.226	.242	82	49	66	64	N E b N	N E	N b E	N 23 E	8.0	5.4	10.0	7.21	7.96	inap	...
30	.564	.480	.458	.4923	44.3	54.7	49.3	49.80	+ 8.85	.230	.273	2 2	.252	79	64	72	70	N	S	N N W	N 18 W	9.8	2.2	6.2	4.27	6.23	...	...
31	.524	.643	.748	.6527	43.9	46.8	37.8	43.55	+ 2.80	.218	.198	.183	.20	75	61	80	72	N W b N	N W b N	Calm	N 36 W	12.2	16.2	0.0	7.74	8.55	...	...
M	29.6797	29.6482	29.6607	29.6647	44 71	56.45	47.87	49.93	+ 4.88	.262	.282	.268	.272	84	61	77	73	.....	.....	.....	.....	5.15	8.49	3.67	.....	5.73	1.970	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR OCTOBER, 1867.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....30.184 at 8 a.m. on 7th } Monthly range=
Lowest Barometer.....29.051 at 2 p.m. on 10th } 1.133 inches.

Self-registering Thermometer:
- Maximum Temperature .....75°4 on 18th } Monthly range= 44°.4
- Minimum Temperature.....31°0 on 1st }
- Mean Maximum Temperature .....58°5 } Mean daily range= 16°.34
- Mean Minimum Temperature .....42°51 }
- Greatest daily range.....31°8 from a.m. to p.m. of 1st.
- Least daily range .....3°1 from a.m. to p.m. of 5th.

Warmest Day.....19th...Mean Temperature.....61°03 }
Coldest Day.....7th...Mean Temperature.....41°07 } Difference=19°96
Maximum Solar Radiation.....117°5 on 17th }
Maximum Terrestrial Radiation.....20°0 on 1st } Monthly range=97°5

Aurora observed on 5 nights, viz.:—2nd, 3rd, 5th, 24th, and 29th.
Possible to see Aurora on 20 nights; impossible on 11 nights.
Snowing on days; depth inches; duration of fall hours,
Raining on 11 days; depth 1.970 inches; duration of fall 40.2 hours.
Mean of Cloudiness—0.48.
Most cloudy hour observed 4 p.m.; Mean, 0,56; least cloudy hour, 8 a.m.; Mean. 0.42.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1914.64	1114.25	856 29	1043.16

Resultant Direction N. 45° W.; Resultant Velocity 1.51,
Mean Velocity 5.73 miles per hour.
Maximum Velocity 21.4 miles from 3 30 to 4 30 p.m., of 5th.
Most Windy day 5th: Mean Velocity 10.35 miles per hour. } Difference 8.46 miles.
Least Windy day 8th; Mean Velocity 1.89 miles per hour.
Most Windy hour, Noon; Mean Velocity 8.47 miles per hour } Difference 4.83 miles.
Least Windy hour 10 p.m.; Mean Velocity 3.64 miles per hour.

2nd October, Thunderstorm.
9th, Lightning in S. E., p. m.
10th, Thunderstorm, 1 p. m.
11th. Solar halo.
19th. Lightning at night.
20th, Lightning at night.
19th to 23rd and 25th, 26th and 27th, had every appearance of being "The Indian Summer."

COMPARATIVE TABLE FOR OCTOBER.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant Direction.	Velo'y.	Mean Velocity
	°	°	°	°	°					°		
1840	44.4	— 1.3	73.0	24.0	50.0	13	1.800	3	...	...	...	...
1841	41.6	— 4.1	59.7	20.6	39.1	6	1.360	2	...	...	...	0.41 lbs
1842	45.1	— 0.6	68.6	27.5	41.1	8	3.175	0	...	...	...	0.35
1843	41.8	— 3.9	66.0	24.2	43.8	12	3.790	4	2.5	...	...	0.54
1844	43.3	— 2.4	71.6	15.9	55.7	7	impr	4	12·0	...	...	0.43
1845	46.4	+ 0.7	64.0	19.7	44.3	11	1.760	1	imap.	...	...	0.26
1846	44.6	— 1.1	70.1	20.7	49.4	14	4.180	2	imap,	...	...	0.44
1847	44.0	— 1.7	64.6	20.4	44.2	13	4.390	2	imap.	...	...	0.19
1848	46.3	+ 0.6	61.8	24.5	37.3	11	1.550	0	...	N 54 W	1.24	4.66mls
1849	45.3	— 0.4	58.9	24.2	34.7	13	5.965	1	imap.	N 12 W	1.27	7.76
1850	45.4	— 0.3	66.7	22.4	44.3	10	2.085	0	...	N 66 W	1.10	5.30
1851	47.4	+ 1.7	66.2	25.2	41.0	10	1.038	2	0.3	S 72 W	1.06	4.39
1852	48.0	+ 2.3	70.7	23.8	46.9	12	5.280	0	...	N 5 E	1.19	4.47
1853	44.4	— 1.3	64.7	23.4	41.3	10	0.875	2	imap	S 88 W	1.74	4.77
1854	49.5	+ 3.8	75.4	26.4	49.0	15	1.430	3	imap	N 45 W	1.52	4.57
1855	45.4	— 0.3	68.0	22.6	45.4	14	2.480	5	0.8	N 82 W	4.91	9.88
1856	45.3	— 0.4	71.4	23.0	48.4	19	0.875	2	0.1	N 76 W	2.15	6.07
1857	45.4	— 0.3	64.0	20.5	37.5	10	1.044	2	0.2	N 19 W	2.93	6.24
1858	48.8	+ 3.1	76.3	31.5	44.8	17	1.797	1	imap	N 24 W	0.36	5.96
1859	43.0	— 2.7	69.8	22.3	47.5	11	0.944	4	imap.	N 68 W	5.04	8.12
1860	47.3	+ 1.6	68.0	28.4	39.6	15	1.610	1	imap	N 9 W	2.00	6.93
1861	48.7	+ 3.0	71.0	29.0	42.0	15	1.990	1	imap	N 61 W	1.06	5.96
1862	48.7	+ 3.0	76.6	26.2	50.4	19	2.681	2	0.5	N 78 W	2.89	6.63
1863	45.9	+ 0.2	66.4	30.5	35.9	16	2.52	0	...	S 71 W	0.48	6.16
1864	45.2	— 0.5	67.0	28.0	39.0	22	3.321	1	imap.	N 60 W	3.17	6.06
1865	44.5	— 1.2	71.4	21.6	49.8	17	2.70	3	4.5	N 36 W	3.55	7.26
1866	49.1	+ 3.4	71.0	31.8	39.2	11	2.470	1	imap	N 30 W	0.84	5.63
1867	49.9	+ 4.2	75.4	31.0	44.4	11	1.970	0	...	N 45 W	1.51	5.73
Results to 1866.	45.73	...	68.33	24.57	43.76	12.67	2.534	1.8	0.87	N 57 W	1.77	6.01
Excess for '67	+ 4.17	...	+ 7.07	+ 6.43	+ 0.64	— 1.67	— 0.564	— 1.8	— 0.87	...	...	— 0.28

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—NOVEMBER, 1867.

Latitude—43° 39′4 *North.* *Longitude*—5*h.* 17*m.* 33*s. West.* *Elevation above Lake Ontario*, 108 *feet*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 PM	ME'N.		6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M	2 P.M	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M		6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN		
					°	°	°	°	°												°								
1	29.631	29.313	29.193	29.3612	44.6	55.8	56.2	52.62	+12.15	.226	.281	.296	.255	77	62	65	63	S W	S W B S	S W B N	S 41 W	8.0	21.0	10.5	12.08	12.26	...	...
2	.118	.289	.501	.3170	51.8	53.6	42.8	49.12	+ 8.85	.280	.147	.168	.200	72	35	61	57	S W B S	N W B W	Calm	N 75 W	3.6	27.5	0.0	9.67	10.78	0.020	...
3	.521	.156	—	—	43.2	45.4	—	—	—	.254	.283	—	—	91	93	—	—	N E	E	S S W	S 32 W	4.5	14.0	20.3	5.19	16.01	.795	...
4	.301	.587	.819	.6007	40.3	40.3	34.2	37.90	— 1.87	.159	.176	.168	.164	63	69	85	73	W B S	N W B N	W	S 89 W	18.0	11.0	5.0	7.93	8.29	Insp.	Insp.
5	.889	.757	.792	.8088	32.7	46.4	36.0	38.50	— 0.98	.165	.130	.137	.143	88	41	65	63	S W B W	S W B W	W N W	S 87 W	11.0	19.5	22.8	12.86	14.21	...	Insp.
6	.902	.894	.932	.9108	30.6	37.8	30.6	32.52	— 6.65	.152	.148	.131	.141	89	65	76	77	N W	Calm	N E	S 79 E	0.6	0.0	3.0	3.40	3.66	...	...
7	.785	.610	.525	.6263	34.9	39.9	37.0	37.55	— 1.45	.151	.185	.193	.180	75	75	87	80	E S E	E B N	E N E	N 84 E	11.5	14.8	11.0	11.00	11.25	...	...
8	.422	.324	.306	.3417	40.7	57.3	54.0	50.57	+11.88	.213	.303	.325	.283	84	64	78	76	E B N	S S W	S	S 5 E	4.0	10.5	1.0	3.18	4.00	.030	...
9	.252	.352	.502	.3893	53.6	58.3	45.4	51.33	+12.93	.384	.195	.179	.251	93	39	59	65	S B W	S W	Calm	S 44 W	8.8	10.4	0.0	6.42	6.67	...	...
10	.565	.541	—	—	45.4	61.5	—	—	—	.189	.213	—	—	62	54	—	—	S W B S	S B W	S W B W	S 38 W	1.3	8.2	7.1	4.84	5.09	...	...
11	.610	.579	.662	.6213	38.1	42.8	32.0	37.10	— 0.68	.195	.119	.135	.143	85	41	74	65	Calm	W B S	W B N	N 83 W	0.0	1.0	3.4	2.99	3.41	...	...
12	.644	.656	.664	.6507	33.4	35.3	30.9	32.67	— 4.83	.141	.146	.142	.139	74	71	81	75	N N W	N W B N	W B N	N 48 W	7.5	20.8	5.8	9.25	9.68	...	0.3
13	.513	.548	.504	.5187	27.5	34.5	30.2	30.50	— 6.68	.137	.137	.146	.138	92	68	87	82	Calm	N W	Calm	N 42 W	0.0	20.0	0.0	4.15	4.33	...	0.2
14	.158	.302	.635	.3890	28.4	41.0	39.2	32.87	— 4.03	.142	.116	.104	.121	90	45	62	65	Calm	N W B W	N B W	N 45 W	0.0	28.0	10.0	10.51	11.22	...	Inap.
15	.797	.833	.562	.7088	21.9	33.4	39.2	32.10	— 4.40	.105	.134	.216	.147	89	70	90	77	Calm	S W	S B W	S 53 W	0.0	7.8	10.0	6.66	8.41	...	...
16	.304	.548	.654	.5157	38.1	34.3	29.8	33.80	— 2.40	.187	.109	.147	.142	81	54	88	78	W B N	N W B W	W B S	N 69 W	21.2	28.0	9.0	15.55	16.10	...	0.1
17	.498	.392	—	—	29.8	35.3	—	—	—	.147	.119	—	—	88	57	—	—	W B S	N W B N	N B W	N 43 W	2.0	19.0	9.5	10.11	12.67	...	Inap.
18	.703	.685	.703	.7000	15.0	23.0	23.7	20.87	—14.62	.075	.077	.091	.080	87	63	71	71	N	W B N	W	N 65 W	2.0	1.0	13.0	5.03	5.82	...	...
19	.826	.804	.769	.7933	14.1	29.8	29.8	25.17	— 9.92	.073	.117	.109	.096	89	71	66	70	N B W	W B S	W S W	S 61 W	3.8	8.0	6.2	5.16	5.50	...	0.1
20	.617	.526	.726	.6337	35.6	46.1	35.1	38.12	+ 3.35	.178	.144	.165	.155	85	45	81	69	S W B W	W	N B W	S 80 W	5.5	14.2	0.5	5.79	6.72	...	...
21	.844	.783	.742	.7907	32.7	35.6	38.1	35.35	+ 0.97	.173	.187	.213	.188	92	89	93	90	N E B E	E	E	N 87 E	2.0	7.6	3.8	4.06	4.09	...	...
22	.670	.626	.632	.6463	34.2	42.8	39.6	38.82	+ 4.73	.172	.232	.227	.208	87	84	94	88	Calm	E B S	Calm	N 86 E	0.0	2.0	0.0	0.33	0.33	...	...
23	.656	.656	.707	.6785	39.6	48.2	38.5	40.97	+ 7.30	.227	.277	.225	.235	94	82	96	91	Calm	Calm	S E B S	S 88 E	0.0	0.0	1.5	0.67	0.97	Insp.	...
24	.687	.580	—	—	39.6	50.4	—	—	—	.237	.318	—	—	97	86	—	—	N E	E	S B W	S 66 E	4.8	4.4	0.7	1.01	1.59	.305	...
25	.558	.380	.315	.4090	47.9	50.4	47.2	48.13	+15.17	.333	.288	.310	.308	99	78	95	91	S S W	S S E	S S W	S 45 W	1.4	6.0	8.4	6.30	8.50	.095	...
26	.504	.710	.862	.7175	39.2	41.0	35.3	37.72	+ 5.15	.131	.149	.153	.143	54	58	74	63	W	W B N	W B N	N 70 W	16.4	14.6	2.0	7.38	7.46	...	...
27	.844	.721	.633	.7317	33.4	39.2	37.8	37.05	+ 4.87	.163	.173	.190	.176	85	72	84	80	Calm	Calm	S	S 6 W	0.0	0.0	1.4	0.63	0.63	...	...
28	.620	.642	.624	.6223	36.7	41.0	39.8	39.12	+ 7.23	.197	.218	.207	.210	90	85	85	88	Calm	Calm	Calm	S 5 W	0.0	0.0	0.0	2.12	2.83	...	...
29	.385	28.925	.055	.1220	41.4	42.1	25.2	35.62	+ 4.12	.221	.259	.094	.191	85	96	68	84	S S E	S E B E	W N W	N 66 W	9.4	7.0	33.2	11.04	18.27	.590	0.2
30	.306	29.575	.813	.5903	15.6	12.9	9.6	12.30	—18.78	.075	.051	.054	.062	84	66	89	82	W B N	N W	W B N	N 64 W	14.4	9.2	6.8	10.69	12.07	...	...
M.	29.5715	29.5625	29.6485	29.5844	34.69	40.88	35.70	36.86	+ 0.71	.179	.173	.174	.173	84	65	79	75	.....	.....	.....	.....	5.39	11.18	6.86	.....	7.76	1.835	0.9

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR NOVEMBER, 1867.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 0 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 29.939 at 8 a.m. on 6th.
Lowest Barometer . . . . . 28.843 at 6 p.m. on 29th. } Monthly range= 1.096 inches.

Self-registering Ther.

Maximum temperature . . . . 60°4 on 3rd
Minimum temperature . . . . 9°6 on 30th } Monthly range=50°8

Mean maximum temperature . . 45°40
Mean minimum temperature . . 32°41 } Mean daily range=12°99

Greatest daily range . . . . . 23°7 from a.m. to p.m. of 19th.
Least daily range . . . . . 4°0 from a.m. to p.m. of 29th.

Warmest day . . . 1st ...Mean temperature . . . 52°62
Coldest day . . . . 30th...Mean temperature . . . 12°30 } Difference=40°32.

Maximum Solar . . . . . 95°.0 on 9th
Radiation Terrestrial. . . . . 4°.0 on 19th } Monthly range=91°.0

Aurora observed on 1 night, viz.:—30th.
Possible to see Aurora on 12 nights; impossible on 18 nights.
Snowing on 9 days; depth, 0.9 inches; duration of fall, 17.4 hours.
Raining on 8 days; depth, 1.835 inches; duration of fall, 26.7 hours.
Mean of cloudiness=0.75. Most cloudy hour observed, 12 p.m.; mean, 0.79; least do., do., 6 a.m.; mean, 0.70.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1474.85	1319.24	729.35	3624.72

Resultant direction, N. 87° W.; resultant velocity, 4.02 miles per hour.
Mean velocity, 7.76 miles per hour.
Maximum velocity, 34.8 miles, from 11 p.m to midnight on 29th.

Most windy day, 29th; mean velocity, 18 27 miles per hour.
Least windy day, 22nd; mean velocity, 0.33 miles per hour. } Difference, 17.94 miles.

Most windy hour, noon; mean velocity, 11 45 miles per hour.
Least windy hour, 6 a.m.; mean velocity, 5.40 miles per hour. } Difference 6.05 miles.

3rd. Thunder at 2 p.m.
11th, Solar halo
14th, Grand display of periodic meteors.
24th, Very dense fog, a.m.
29th, Heavy gale of wind at night.

COMPARATIVE TABLE FOR NOVEMBER.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum	Minimum.	Range.	RAIN. No. of days	Inches.	SNOW. No. of days	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1840	35.9	— 1.0	56.8	14.6	42.2	5	1.220	8	...	...	...	...
1841	35.0	— 1.9	63.8	8.5	55.3	8	2.450	5	...	...	...	0.91 lbs.
1842	33.3	— 3.6	56.8	8.1	48.7	9	5.310	10	...	...	...	1.22
1843	33.5	— 3.4	52.6	14.1	38.5	10	4.765	7	1.2	...	...	0.59
1844	34.9	— 2.0	56.0	12.1	43.9	8	Imp'r	4	8.0	...	...	0.48
1845	36.8	— 0.1	59.5	8.1	51.4	7	4.105	4	5.0	...	...	0.53
1846	41.3	+ 4.4	55.6	18.0	37.6	12	5.805	2	0.4	...	...	0.64
1847	38.6	+ 1.7	57.9	8.7	49.2	14	3.155	3	Inp.	...	...	0.36
1848	34.5	— 2.4	49.0	15.9	33.1	9	2.020	3	1.4	N 81 W	1.81	4.81 miles.
1849	42.6	+ 5.7	56.4	26.5	29.9	10	2.815	2	1.0	N 39 W	1.55	4.78
1850	38.8	+ 1.9	62.8	11.0	51.8	7	2.955	1	Inp	N 42 W	1.43	5.27
1851	32.9	— 4.0	50.2	13.8	36.4	5	3.885	6	6.7	N 50 W	1.25	4.70
1852	36.0	— 0.9	50.4	18.2	32.2	7	1.775	3	2.0	N 59 W	1.53	6.50
1853	38.7	+ 1.8	55.6	12.8	42.8	15	2.425	6	2.7	N 9 W	0.55	5.52
1854	36.8	— 0.1	55.4	13.8	41.6	13	1.115	4	1.3	W	3.44	7.54
1855	38.6	+ 1.7	59.2	15.5	43.7	8	4.590	6	3.0	N 66 W	3.18	10.81
1856	37.4	+ 0.5	56.4	18.8	37.6	10	1.375	9	9.5	S 85 W	2.95	8.75
1857	33.5	— 3.4	58.2	—3.5	61.7	14	3.235	9	6.9	S 61 W	5.45	9.25
1858	34.2	— 2.7	53.0	15.3	37.7	12	3.879	13	4.0	N 25 W	3.14	8.87
1859	38.9	+ 2.0	62.6	21.8	40.8	12	5.193	9	0.6	N 81 W	3.39	9.65
1860	37.9	+ 1.0	64.5	13.2	51.3	13	2.569	8	1.9	S 89 W	4.95	11.02
1861	37.1	+ 0.2	52.4	23.0	29.4	14	4.294	8	3.2	N 46 W	1.94	7.44
1862	35.6	— 1.3	58.0	16.2	41.8	11	2.205	11	5.3	N 46 W	3.00	6.60
1863	39.1	+ 2.2	67.0	17.8	49.2	13	3.656	6	0.1	N 88 W	3.50	7.86
1864	36.9	0.0	60.2	21.0	39.2	11	3.765	8	4.5	S 72 W	3.82	7.64
1865	38.6	+ 1.7	63.2	23.6	39.6	5	0.975	7	1.1	N 79 W	2.98	7.90
1866	38.4	+ 1.5	54.2	21.8	32.4	13	2.963	4	2.2	N 88 W	3.06	6.96
1867	36.9	0.0	60.4	9.6	50.8	8	1.835	9	0.9	N 87 W	4.02	7.76
Results to 1866	36.88	.....	57.32	15.14	42.18	10.15	3.058	6.1	3.00	N 79 W	2.49	7.47
Exc. for 1867.	—0.02	.....	+3.08	—5.54	+8.62	2.15	1.223	2.9	2.10	...	...	+ 0.29

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—DECEMBER, 1867.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17m. 33s. *West* *Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	MEAN.		6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Resultant.	MEAN		
					°	°	°	°	°												°						
1	29.827	29.787	—	—	16.1	24.1	—	—	—	.074	.093	—	—	83	72	—	—	W	S W B S	S W	S 43 W	11.4	15.6	11.6	10.44	11.00	...	0.1
2	.602	.554	29.641	29.6028	28.4	32.5	34.2	31.55	+ 1.07	.134	.145	.147	.141	86	78	75	79	W S W	W B S	W B S	S 70 W	0.4	9.0	13.6	7.52	7.91	...	0.1
3	.697	.476	.510	.5637	29.1	34.9	33.8	32.43	+ 2.35	.141	.102	.129	.126	87	49	66	69	S W B W	S W	N B W	W	7.0	21.0	16.0	7.16	11.87	...	Inap.
4	.567	.408	.319	.4218	8.9	23.3	19.7	17.73	—12.05	.055	.074	.090	.071	84	49	84	72	Calm	W B S	W B S	N 67 W	0.0	10.2	6.2	5.48	5.61	...	Inap.
5	.337	.403	.603	.4565	21.5	29.1	18.6	23.35	— 6.02	.102	.104	.090	.100	88	65	90	80	W B S	W B N	Calm	S 80 W	4.8	17.2	0.0	5.71	8.10	...	0.2
6	.347	28.828	.026	.0607	32.0	39.9	34.2	35.67	+ 6.60	.166	.202	.177	.180	91	84	89	88	S	S S W	W B S	...	16.0	19.8	...	...	...	...	0.2
7	.389	29.382	.655	.4913	25.1	27.7	14.7	21.60	— 7.07	.102	.045	.047	.065	75	28	56	55	W B N	W B S	W B S	S 86 W	15.0	21.0	10.2	...	15.65	...	Inap.
8	.641	.674	—	—	14.0	21.5	—	—	—	.062	.076	—	—	76	65	—	—	S W B W	W B S	N B W	N 68 W	13.8	5.0	8.1	...	4.50	...	2.5
9	.901	.794	.507	.7112	1.7	8.9	22.3	11.88	—16.27	.033	.055	.108	.071	67	84	90	82	N N W	Calm	Calm	N 78 W	0.8	0.0	0.0	...	3.44	...	0.5
10	.389	.541	.543	.5027	22.6	20.1	16.5	18.33	— 9.52	.097	.059	.076	.072	80	55	83	72	N W B N	Calm	Calm	N 48 W	21.2	0.0	0.0	...	3.60	...	Inap.
11	.557	.629	.771	.6640	16.5	17.6	7.5	13.23	—14.42	.076	.057	.037	.059	83	60	59	72	Calm	N	N E	N 21 E	0.0	9.0	9.0	...	8.76	...	...
12	.806	.752	.850	.8048	−5.5	− 3.3	−4.4	−5.02	—32.37	.019	.024	.027	.023	56	66	75	66	N E B N	N E B N	N N E	N 26 E	14.0	15.0	10.4	...	11.73	...	...
13	.931	.917	.893	.9155	−10.2	5.7	3.9	0.52	—26.63	.021	.047	.035	.034	78	83	65	73	N	N B E	N B E	N 12 E	11.6	4.0	6.6	...	6.21	...	...
14	.838	.735	.693	.7482	7.8	14.0	14.3	12.47	—14.50	.051	.074	.076	.069	82	90	92	88	N E	N E B E	N E B N	N 46 E	9.2	10.2	11.0	...	11.41	...	0.3
15	.798	.561	—	—	17.2	21.9	—	—	—	.081	.099	—	—	86	84	—	—	N E	Calm	Calm	N 47 E	6.6	0.0	0.0	...	1.49	...	2.0
16	.525	.499	.471	.4982	18.6	24.4	21.2	21.12	— 5.45	.090	.110	.099	.098	90	84	87	87	Calm	Calm	Calm	...	0.0	0.0	0.0	...	...	...	0.1
17	.305	.239	.531	.3693	23.0	24.8	21.2	22.55	— 3.84	.106	.120	.092	.104	86	90	81	85	Calm	N	N W B N		0.0	9.5	10.0	...	...	Inap.	...
18	.695	.823	30.005	.8675	8.2	16.1	10.0	11.37	—14.60	.057	.061	.061	.060	91	67	89	82	N	N N W	N W	N 22 W	8.2	11.8	3.2	6.48	6.72	...	...
19	30.141	30.140	29.976	30.0687	4.2	16.5	19.7	13.25	—12.82	.042	.070	.083	.067	78	77	79	80	N	Calm	E S E	S 66 E	5.0	0.0	10.8	3.95	5.87	...	0.5
20	29.647	29.575	.885	29.7092	23.7	33.4	30.6	29.60	+ 3.72	.112	.157	.115	.131	87	82	67	80	S E B S	W	W	S 78 W	10.0	27.0	10.6	9.77	11.64	Inap	0.8
21	30.010	.928	.608	.5303	24.4	33.4	30.9	29.47	+ 3.68	.117	.157	.157	.141	89	82	90	86	Calm	E B S	E B S	S 80 E	0.0	3.2	23.0	9.87	10.10	.553	3.0
22	29.140	.043	—	—	37.4	38.3	—	—	—	.223	.168	—	—	99	72	—	—	E B S	W S W	S W B W	S 71 W	9.8	21.0	20.6	16.44	18.72	.090	...
23	.419	.803	.942	.7498	27.0	26.6	22.6	24.95	— 0.62	.121	.091	.111	.106	82	62	92	74	W N W	W N W	Calm	N 72 W	28.5	19.5	0.0	11.69	14.47	...	Inap.
24	.763	.478	.728	.6540	29.8	35.2	34.9	33.07	+ 7.58	.154	.164	.166	.158	93	80	83	84	S S W	S W B W	S W	S 40 W	15.0	10.2	5.2	7.16	9.50	.035	0.3
25	.569	.405	—	—	34.5	35.2	—	—	—	.192	.204	—	—	96	99	—	—	E	E	S W	S 24 E	12.6	8.0	13.8	1.75	15.02	.475	...
26	.405	.645	.631	.5643	37.8	39.9	34.9	37.18	+11.88	.165	.142	.176	.162	72	57	86	74	W B S	W	S S W	S 85 W	21.6	7.6	1.0	4.23	8.22	...	...
27	.260	.065	.307	.2072	37.4	41.4	37.0	38.37	+13.08	.213	.259	.209	.229	95	99	95	97	E S E	S S E	W	N 72 W	5.2	3.3	7.2	7.40	8.59	.255	...
28	.600	.688	.606	.6385	30.6	29.8	32.7	30.48	+ 5.33	.107	.088	.135	.107	63	52	73	62	N W B W	Calm	S W B W	W	18.0	0.0	11.2	9.39	10.66	...	...
29	.752	.850	—	—	23.7	24.4	—	—	—	.076	.061	—	—	59	46	—	—	W S W	W	W B S	S 86 W	18.1	24.0	7.2	15.11	15.22	...	Inap.
30	30.039	30.179	30.228	30.1485	20.1	17.6	10.4	15.48	— 9.68	.091	.045	.055	.063	85	46	78	71	W B S	N W B N	N	N 40 W	13.3	12.8	3.2	4.57	6.46	...	Inap.
31	30.148	29.971	29.717	29.9223	8.2	23.7	30.6	20.12	— 5.07	.052	.076	.107	.081	82	59	63	72	N	E B N	E S E	S 86 E	5.6	7.0	16.5	9.24	10.35	...	3.0
M	29.6527	29.6181	29.6058	29.6408	18.84	24.53	22.08	21.62	— 5.46	.097	.101	.104	.101	82	70	79	77	.....	.....	.....	.....	9.76	10.38	8.21	...	10.32	1.408	13.6

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR DECEMBER, 1867.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 30.228 at 10 p.m. on 30th. } Monthly range—
Lowest Barometer . . . . . 28.768 at 4 p.m. on 6th. } 1.460.

Self-registering Ther.
- Maximum temperature . . . . . 49°5 on 25th. } Monthly range—
- Minimum temperature . . . . . -12°8 on 13th. } 62°3
- Mean maximum temperature . . . . . 29°41 } Mean daily range—
- Mean minimum temperature . . . . . 15°30 } 14°11
- Greatest daily range . . . . . 30°0 from a.m. to p.m. of 9th.
- Least daily range . . . . . 4°0 from a.m. to p.m. of 30th.

Warmest day . . . . 27th...Mean temperature . . . 38°37 } Difference—43°39.
Coldest day . . . . 12th...Mean temperature . . . -5°02 }

Maximum Radiation { Solar . . . . . 77°0 on 26th. } Monthly range—92°5
{ Terrestrial . . . . . -15°5 on 13th. }

Aurora observed on 1 night, viz.: 30th.
Possible to see aurora on 10 nights; impossible on 21 nights.
Snowing on 21 days; depth, 13.6 inches; duration of fall, 76.5 hours.
Raining on 7 days; depth, 1.408 inches; duration of fall, 30.5 hours.
Mean of cloudiness—0.78.
Most cloudy hour observed, 2 p.m.; mean, 0.80; least cloudy hour observed, 6 a.m.; mean, 0.76.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South	East.	West.
796.83	1126.58	847.93	3019.84

Resultant direction, S. 81° W.; Resultant Velocity, 4.82.
Mean velocity, 10.32 miles per hour.
Maximum velocity, 36.8 miles, from 7 to 8 p.m. of 6th.

Most windy day, 22nd; mean velocity, 18.72 miles per hour
Least windy day, 4th; mean velocity, 5.61 miles per hour } Difference, 13.11 miles.

Most windy hour, 1 p.m.; mean velocity, 12.08 miles per hour
Least windy hour, 8 p.m.; mean velocity, 8.59 miles per hour } Difference, 3.49 miles.

2nd December. Solar halo. 4th. Lunar halo. 5th. Lunar halo. 6th. Very heavy gale of wind. 11th. Solar halo and Lunar halo. 11th. Toronto Bay frozen over. 12th. Lunar halo. 12th. Solar halo, very cold day, the coldest on the records of the Observatory during the month of December. 18th. Earthquake felt in Toronto at 3 a.m.

COMPARATIVE TABLE FOR DECEMBER, 1867.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum	Minimum.	Range.	RAIN. No. of days	Inches.	SNOW. No. of days	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1840	24.3	— 1.9	42.1	— 8.6	50.7	3	Inap.	18	...	...	...	...
1841	28.7	+ 2.5	46.1	3.1	43.0	7	6.600	5	...	...	...	1.33lbs
1842	24.7	— 1.5	40.5	3.2	37.3	3	0.880	17	...	...	...	0.61
1843	30.0	+ 3.8	48.5	3.1	45.4	6	1.040	8	8.1	...	...	0.53
1844	28.2	+ 2.0	48.5	1.6	46.9	6	Impr	6	4.2	...	...	0.40
1845	21.1	— 5.1	39.7	— 2.4	42.1	2	Inap	12	4.7	...	...	0.70
1846	27.5	+ 1.3	49.2	3.9	45.3	5	1.215	9	6.0	...	...	0.57
1847	30.1	+ 3.9	49.6	0.3	49.3	7	1.185	8	6.8	...	...	0.55
1848	29.1	+ 2.9	48.8	1.1	47.7	7	2.750	7	16.5	S 83 W	1.12	5.44 m.
1849	26.5	+ 0.3	40.8	— 6.5	47.3	5	0.840	12	9.6	N 82 W	2.56	6.23
1850	21.7	— 4.5	48.8	— 9.0	57.8	2	0.190	18	29.5	N 44 W	2.93	7.40
1851	21.5	— 4.7	44.0	—14.8	58.8	6	1.075	15	10.7	N 82 W	4.00	7.37
1852	31.9	+ 5.7	51.0	13.2	37.8	7	3.995	10	20.1	S 69 W	1.03	6.54
1853	25.3	— 0.9	46.4	— 8.4	54.8	4	0.625	18	22.3	N 35 W	2.39	4.98
1854	21.9	— 4.3	44.8	— 7.0	51.8	5	0.590	12	17.2	N 44 W	4.30	8.56
1855	26.8	+ 0.6	47.0	— 5.2	52.2	6	1.845	10	29.5	S 88 W	5.29	11.38
1856	22.9	— 3.3	42.2	— 9.1	51.3	6	1.790	20	16.3	S 87 W	4.62	11.56
1857	31.9	+ 5.7	46.0	4.7	41.3	7	3.205	14	9.0	N 89 W	2.50	6.84
1858	27.4	+ 1.2	45.4	4.2	41.2	11	1.657	18	10.4	N 78 W	1.66	9.36
1859	17.9	— 8.3	54.8	— 6.0	60.8	3	1.035	23	37.4	N 53 W	4.29	10.79
1860	24.0	— 2.2	39.0	— 7.0	46.0	3	1.362	21	13.5	N 62 W	4.66	10.14
1861	31.1	+ 4.9	55.2	5.5	49.7	6	0.560	8	6.8	N 72 W	3.50	7.96
1862	28.8	+ 2.6	50.1	— 3.4	53.5	5	1.945	8	10.4	N 73 W	3.17	7.58
1863	27.0	+ 0.8	53.4	— 1.5	54.9	10	2.960	17	7.1	N 41 W	1.61	9.40
1864	24.7	— 1.5	51.4	—10.4	60.8	9	2.045	18	27.1	S 82 W	4.94	9.98
1865	27.7	+ 1.5	54.2	5.7	48.5	7	1.727	11	5.2	S 81 W	3.07	7.33
1866	25.1	— 1.1	51.0	— 5.0	56.0	7	2.790	13	15.5	S 88 W	4.98	9.91
1867	21.6	— 4.6	49.5	—12.8	62.3	7	1.408	21	13.6	S 81 W	4.82	10.32
Results to 1866	26.21	.....	47.31	—2.03	49.34	5.74	1.689	13.0	14.33	N 74 W	3.05	8.35
Excess for 1867	—4.61	.....	+2.19	10.77	12.96	+ 1.26	— 0.282	+ 8.0	— 0.73	...	...	+ 1.97

GENERAL METEOROLOGICAL REGISTER

FOR THE YEAR 1867.

GENERAL METEOROLOGICAL

MAGNETICAL OBSERVATORY,

Latitude 4° 30′ 4″ North. Longitude 5h. 17m. 33s. West. Elevation above

	JAN.	FEB.	MAR.	APR.	MAY.	JUNE.	JULY.
	°	°	°	°	°	°	°
Mean temperature	17·59	28·91	26·61	39·46	46·55	64·30	68·21
Difference from average (27 years)	— 5·70	+ 5·96	— 3·31	— 1·73	— 5·03	+ 2·89	+ 1·18
Thermic anomaly (lat. 43° 40′)	—15·21	— 5·79	—13·49	—10·74	—11·55	— 0·30	— 0·48
Highest temperature	43·8	44·0	46·8	65·5	65·0	88·6	94·0
Lowest temperature	— 4·8	0·2	8·0	25·4	24·6	44·0	48·2
Monthly and annual ranges	48·6	43·8	43·8	40·1	40·4	44·6	45·8
Mean maximum temperature	23·23	34·32	33.89	47·73	54·77	73·36	77·63
Mean minimum temperature	11·61	21·59	21·11	33·79	39·75	55·61	58·45
Mean daily range	11·62	12·73	12·78	13·93	15·02	17·75	19·18
Greatest daily range	31·6	27·6	27·6	27·2	26·3	28·0	29·2
Mean height of the Barometer	29·5676	29·6582	29·7123	29·5277	29·4772	29·6175	29·6054
Difference from average (26 years)	—·0822	+·0315	+·1206	—·0721	—·1001	+·0476	+·0066
Highest barometer	30·046	30·332	30·127	29·958	30·093	29·870	29·935
Lowest barometer	28·920	28·799	28·912	28·930	29·044	29·143	29·292
Monthly and annual ranges	1·126	1·533	1·215	1·028	1·049	0·727	0·643
Mean humidity of the air	82	81	78	73	72	71	66
Mean elasticity of aqueous vapour	0·086	0·132	0·116	0·181	0·233	0·429	0·458
Mean of cloudiness	0·73	0·82	0·72	0·62	0·69	0·45	0·48
Difference from average (14 years)	+ ·01	+ 0·10	+ 0·10	+ ·06	+ 0·16	— 1·07	0·00
Resultant direction of the wind	N 55 W	N 57 W	N 84 W	N 51 W	N 51 W	S 84 E	N 42 W
" Velocity of the wind	3·27	1·58	2·12	2·68	3·55	0·48	1·13
Mean velocity (miles per hour)	6·96	8·85	8·52	7·89	8·40	4·13	5·45
Difference from average (19 years)	— 1·20	+ 0·46	— 0·31	— 0·18	+ 1·73	— 1·06	+ 0·50
Total amount of rain	Inapp.	1·328	0·617	2·147	3·220	0·885	1·965
Difference from average (26–27 years)	—1·266	—0·342	+1·012	—0·315	—0·004	—1·944	—1·543
Number of days rain	1	8	6	12	18	8	12
Total amount of snow	42·0	18·4	33·4	7.2	Inapp.	...	...
Difference from average (24 years)	+27·07	— 4·55	+23·97	+ 4·91	— 0·08	...	...
Number of days snow	21	13	14	5	1	...	...
Number of fair days	9	9	13	14	12	22	19
Number of auroras observed	0	0	1	2	8	5	3
Possible to see aurora (No. of nights)	10	7	11	15	19	23	22
Number of thunderstorms	0	0	0	1	1	5	7

REGISTER FOR THE YEAR 1867.

TORONTO, ONTARIO.

Lake Ontario, 106 feet. Approximate elevation above the Sea, 342 feet.

Aug.	Sept.	Oct.	Nov.	Dec.	Year 1867.	Year 1866.	Year 1865.	Year 1864.	Year 1863.	Year 1862.	Year 1861.
°	°	°	°	°	°	°	°	°	°	°	°
65·09	57·92	49·93	36·86	21·63	43·84	43·51	44·92	44·70	44·57	44·35	44·22
+ 2·12	− 0·07	+ 4·20	− 0·02	− 4·58	− 0.34	− 0·67	+ 0·74	+ 0·52	+ 0·39	+ 0·17	+ 0·04
− 0·41	− 3·58	− 3·87	− 6·34	−14·37	− 7.16	− 7·49	− 6·08	− 6·30	− 6·43	− 6·65	− 6·78
95·2	87·0	75·4	60·4	49·5	95·2	94·0	90·5	94·0	88·0	95·5	87·8
42·2	31·8	31·0	9·6	− 12·8	− 12·8	− 14·0	− 10·0	− 15·0	− 19·8	− 5·2	− 20·8
53·0	55·2	44·4	50·8	62·3	108·0	108·0	100·5	109·0	107·8	100·7	108·6
78·73	68·75	58·85	45·40	29·41	...	...	...	...	...	...	...
58·85	49·43	42·51	32·41	15·30	...	...	...	...	...	...	...
19·88	19·32	16·34	12·99	14·11	15·47	14·99	15·43	14·57	14·73	14·43	14·42
31·7	29·7	31·8	23·7	30·0	31·6	40·8	36·9	37·4	39·6	37·0	33·3
29·5920	29·7143	29·6647	29·5844	29·6468	29·6140	29·6216	29·6330	29·5596	29·6536	29·6248	29·6008
−·0314	+·0539	+·0208	−·0283	−·0091	−·0035	+ ·0041	+ ·0155	−·0579	+ ·0361	+ ·0073	−·0167
29·839	30·117	30·184	29·939	30·228	30·332	30·940	30·354	30·327	30·502	30·469	30·330
29·287	29·354	29·061	28·843	28·768	28·768	28·807	28·707	28·671	28·704	28·805	28·644
0·552	0·763	1·131	1·096	1·460	1·564	2·133	1·647	1·656	1·798	1·664	1·686
68	73	73	75	77	74	75	75	76	77	77	78
0·475	0·369	0·272	0·173	0·101	0·252	·248	·259	·263	·266	·262	·262
0·50	0·29	0·48	0·75	0·78	0·61	0·61	0·61	0·65	0·61	0·63	0·62
+ 0·03	− ·21	− 0·14	+ 0·01	+ 0·04	0·00	0·00	0·00	+ 0·04	0·00	+ 0·02	+ ·01
N 76 W	N 37 W	N 45 W	N 87 W	S 81 W	N 60 W	N 73 W	N 66 W	N 76 W	N 41 W	N 45 W	N 56 W
1·25	1·48	1·51	4·02	4·82	2·05	2·83	1·96	2·49	1·34	2·03	2·11
4·52	5·43	5·73	7·76	10·32	7·00	7·41	6·78	7·40	7·13	7·33	7·47
− 0·65	+ 0·01	− 0·28	+ 0·29	+ 1·97	+ 0·11	+ 0·52	− 0·11	+ 0·51	+ 0·24	+ 0·44	+ 0·58
2·440	1·226	1·970	1·835	1·408	19·041	34·209	26·599	29·486	26·483	25·529	26·995
−0·606	−2·529	−0·564	−1·223	−0·281	−10·942	+ 4·226	−3·384	−0·497	−3·500	−4·454	−2·988
10	9	11	8	7	100	126	111	132	130	118	136
...	...	...	0·9	13·6	110·5	52·1	63·3	74·6	62·9	85·4	74·8
...	...	− 0·87	− 2·10	− 0·73	−47·62	−10·78	+ 0·42	+ 11·72	+ 00·2	+ 22·52	+ 11·72
...	...	...	9	21	84	69	68	70	74	72	76
21	21	20	15	6	181	180	201	180	181	189	165
4	13	5	1	1	43	44	55	34	44	48	43
25	28	20	12	10	202	209	201	158	182	176	180
2	4	2	1	0	23	24	17	20	24	24	27

TEMPERATURE.

	1867.	Average of 27 years.	Extremes.	
	°	°	°	°
Mean temperature of the year	43.84	44.18	46.36 in '46.	42.16 in '56.
Warmest month	July.	July.	July, 1854.	Aug. 1860.
Mean temperature of the warmest month	68.22	67.04	72.47	64.46
Coldest month	January.	February.	Jan. 1857.	Feb. 1848.
Mean temperature of the coldest month	17.59	22.95	12.75	28.60
Difference between the temperatures of the warmest and the coldest months	50.63	44.09	...	...
Mean of deviations of monthly means from their respective averages of 27 years, signs of deviation being disregarded	3.07	2.35	3.62 in 1843.	1.38 in 1864.
Months of greatest deviation, without regard to sign	February.	January.	Jan. 1857.	...
Corresponding magnitude of deviation	5.96	3.8	10.5	...
Warmest day	July 24.	...	July 12, '45.	July 31, '44.
Mean temperature of the warmest day	80.45	77.55	82.32	72.75
Coldest day	Dec. 12.	...	Feb. 6, '55. Jan. 22, '57.	Dec. 22, '42.
Mean temperature of the coldest day	−5.02	−1.23	−14.38	9.57
Date of the highest temperature	Aug. 18.	...	Aug. 24, '54.	Aug. 19, '40.
Highest temperature	95.2	90.7	99.2	82.4
Date of the lowest temperature	Dec. 13.	...	Jan. 26, '59.	Jan. 2, '42.
Lowest temperature	−12.8	−12.3	−26.5	1.9
Range of the year	108.0	103.0	118.2	87.0

BAROMETER.

	1867.	Average of 26 years.	Extremes.	
Mean pressure of the year	29.6140	29.6175	29.6670 in 1849.	29.5602 in 1864.
Month of highest mean pressure	September	September	Jan. 1849.	June, 1864.
Highest mean monthly pressure	29.7143	29.6604	29.8046	29.6525
Month of lowest mean pressure	May.	June.	March, 1859.	Nov. 1849.
Lowest mean monthly pressure	29.4772	29.5099	29.4143	29.5886
		Average of 27 years.		
Date of highest pressure in the year	Feb. 11, 6 a.m.	...	Jan. 8, '66.	Oct. 22, '45.
Highest pressure	30.332	30.385	30.940	30.242
Date of lowest pressure in the year	Dec. 6, 4 p.m.	...	Mar. 19, '59.	Mar. 17, '45.
Lowest pressure	28.768	28.687	28.296	28.939
Range of the year	1.564	1.698	2.133 in 1866.	1.303 in 1845.

RELATIVE HUMIDITY.

	1867.	Average of 20 years.	Extremes.	
Mean humidity of the year	74	78	82 in 1851.	73 in 1858.
Month of greatest humidity	January.	January.	Jan. 1857.	Dec. 1858.
Greatest mean monthly humidity	82	83	89	81
Month of least humidity	July.	May.	Feb. 1843.	April. 1849.
Least mean monthly humidity	66	72	58	76

EXTENT OF SKY CLOUDED.

	1867.	Average of 14 years.	Extremes.	
Mean cloudiness of the year	0.61	0.61	0.65	0.57
Most cloudy month	February.	November.	...	...
Greatest monthly mean of cloudiness	0.82	0.74	0.83	0.73
Least cloudy month	September	August.	...	...
Lowest monthly mean of cloudiness	0.29	0.47	0.29	0.50

WIND.

	1867.	Result of 19 years.	Extremes.	
Resultant direction	N. 60° W.	N. 61° W.	...	...
Resultant velocity in miles	2.05	1.89	...	...
Mean velocity, without regard to direction	7.00	6.89	8.55 in 1860.	5.10 in 1853.
Month of greatest mean velocity	December.	March.	Mar. 1860.	Jan. 1848.
Greatest monthly mean velocity	10.32	8.83	12.41	5.82
Month of least mean velocity	June.	July.	August, 1852	Sept. 1860.
Least monthly mean velocity	4.13	4.95	3.30	5.79
Day of greatest mean velocity	May 1.	...	Mar. 19, '59.	Dec. 2, 1848.
Greatest daily mean velocity	20.99	23.05	31.16	15.30
Day of least mean velocity	Aug. 7.	...	...	...
Least daily mean velocity	0.23	...	...	...
Hour of greatest absolute velocity	Dec. 6. 7 to 8 p.m.	...	Dec. 27, '61. 9-10 a.m.	Mar. 14, '53. 11 to noon.
Greatest velocity	36.3	40.02	46.0	25.6

RAIN.

	1867.	Average of 27 years.	Extremes.	
Total depth of rain in inches	19.041	29.983	43.55 in 1843.	21.505 in 1856.
Number of days in which rain fell	110	109	130 in 1861.	80 in 1841.
Month in which the greatest depth of rain fell	May.	September	Sept. 1843.	Sept. 1848.
Greatest depth of rain in one month	3.220	3.755	9.760	3.115
Month in which the days of rain were most frequent	May.	October.	Oct. 1864.	May, 1841.
Greatest number of rainy days in one month	18	13	22	11
Day in which the greatest amount of rain fell	April 4.	...	Sept. 14, '43.	Sept. 14, '48.
Greatest amount of rain in one day	1.155	2.088	3.455	1.000
Hour of heaviest rain	Sept. 18. 3 to 4 p.m.	...	...	...
Greatest amount of rain in one hour	0.245	...	...	...

SNOW.

	1867.	Average of 24 years.	Extremes.	
Total depth in the year in inches	110.5	62.9	99.0 in 1855.	38.4 in 1851.
Number of days in which snow fall	84	59	87 in 1859.	33 in 1848.
Month in which the greatest depth of snow fell	January.	February.	Feb. 1846.	Dec. 1851.
Greatest depth of snow in one month	42.0	18.0	46.1	10.7
Month in which the days of snow were most frequent	January.	January.	Dec. 1859.	Feb. 1848.
Greatest number of days of snow in one month	December. 21	December. 13	Jan. 1861. 23	8
Days in which the greatest amount of snow fell	Jan. 20. Mar. 21.	...	Feb. 5, 1863.	Jan. 10, 1857.
Greatest fall of snow in one day	15.0	8.2	16.0	5.5

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THE CANADIAN JOURNAL.

NEW SERIES.

No. LXVIII.—APRIL, 1869.

THE PRESIDENT'S ADDRESS.

BY THE REV. WILLIAM HINCKS, F.L.S.,

PROFESSOR OF NATURAL HISTORY, UNIVERSITY COLLEGE, TORONTO.

Read before the Canadian Institute, Jan. 16, 1869.

GENTLEMEN OF THE CANADIAN INSTITUTE:

In assuming the chair, your calling me to which is, I assure you, regarded by me as a very high honour, though some circumstances in my own position made me at first reluctant to accept it, I must follow the usual custom in offering you a few considerations, suggested by the occasion. But in my choice of topics, I have been led in a somewhat unusual direction; and I can only hope that matters which seem to me to have a strong claim on our attention, may not prove unacceptable, or try your patience too severely.

I propose to bring under your notice some thoughts on the nature, utility, proper aims and modes of operation of such Societies as this, in which many of us take so lively an interest. In pursuing the subject, I may possibly offer opinions in which you may by no means all agree with me, but you will do me the justice to believe that they are not laid down dictatorially. They are thrown out for consideration and discussion. I pretend only to give you my own ideas as they have occurred to me, in comparing our condition and aims with those of other similar Societies, and endeavouring to form rational and practical

notions of what ought to be attempted and may be accomplished by such means as are in our power, as well as to estimate our actual state, our prospects, and our just claims upon the public.

Since man is a social being, it is natural that he should seek aid from his fellow-creatures in most of his objects, and should be disposed to combine with some of them in most of his plans and labours. Civilization increases mutual dependence, and draws closer the social bond, thus disposing us the more to that association, of which it greatly increases the power to secure advantages and facilities. Where population, wealth and high cultivation most abound, we are astonished at the multitude of distinct objects for which men have combined together in special societies. Every where they find this the means both for improving in and enjoying their pursuits, with most economy as well as the greatest success. Hence Religion, the most important of the pursuits of an intelligent and accountable being, extends and strengthens its influences by association; and this method, though felt by all to be natural and almost necessary, was not left to be adopted by our own choice, but was from the first provided as part of a divine system, fitted to meet human wants. At the other extreme we see mere amusements cultivated by means of societies, and even the convenient supply of ordinary wants creating a demand for clubs, whilst every needed form of charity, every section of party politics, we may almost say every distinct profession or pursuit in life, has its own society.

Is it then to be wondered at that the lovers of knowledge, which, next to religion, is the noblest and the most valuable of the pursuits of man, should also be disposed to enter into combinations, and should find in them both mutual encouragement and entertainment, and a most efficient means of extending scientific tastes, calling forth in this direction the energies of those who needed only a slight stimulus to enlist them in a glorious service, increasing the variety of rational and innocent pleasures, which are so much needed amidst the labours of active life; and pointing attention to those practical applications of science which are of daily utility, and often of national importance? It would be wasting words to defend the principle or prove the value of scientific societies, but it unfortunately happens that in a complicated social state there are so many interfering objects that it is a real difficulty to fix the proper position and establish the just claims of each.

Our Society takes the highest ground which can be occupied by such a body, in its aspiration to represent in some degree to the world the

learning and science of our portion of this Dominion. We desire to enroll amongst our members all those of our countrymen who engage in original research in any department of knowledge, and who may be supposed to have occasionally some chance of extending the bounds of some science, solving doubts, usefully discussing disputed questions, putting forth theories worthy of consideration, or in any other way leaving the impress of independent thought and truth-loving inquiry on any of the subjects in which man is interested. If any one has observed a new object, a new fact, or a hitherto unperceived relation between objects or facts; if any one can interpret what is thought obscure, or by sober argument show the fallacy of what he deems erroneous; if any one can devise a new application of science to art or human convenience; if any can throw the light of accurate and recondite learning, aided by acuteness and ingenuity, on the obscure records of past times, or by the suggestions of judgment and taste can elevate our enjoyment of beauty in nature and art, we desire all such to help us, that the record of our proceedings may be enriched, and our country may be honoured in the productions of her sons. But we are not permitted to make such as these our only objects. In some states of society, especially in older countries, this might well be; but in the condition in which we live, our design of promoting knowledge implies an attention not only to its accumulation, but to the increase of its influence, by drawing around us and associating with us the intelligent and cultivated whom the various business of life does not allow to become masters in any one branch of learning or science, but who well understand the value of such pursuits, and can appreciate and enjoy what comes under their notice in respect to them. It is our aim and business to associate together all the higher culture of the country, for improvement and enjoyment, derived from the best sources. We are not insensible to, nor do we as individuals fail to recognise, the claims of societies specially intended to spread more widely through the community means and incitements for improvement; but we choose for our sphere the higher departments and higher results of knowledge. We feel that ours is a distinct and an important object, and one worthy to be worked out with zeal and energy.

The young are too readily attracted by the gaieties of life, which they allow to absorb too much of their time; or if they are happy in forming domestic ties, they are sometimes held by them so closely as not only wisely to resist the interference of follies, but even to give up the most

valuable pursuits, which would call them for a few hours from home. But do they sufficiently consider that if they have enjoyed the privilege of a liberal education, the keeping up and extending their knowledge is really necessary to make all they have already done available for their advantage in life, and that the pleasures derivable from the pursuit of knowledge and the cultivation of the mental powers, are incomparably higher and more durable than those afforded by the ordinary amusements of the world? If on the other hand they are engaging in the various pursuits of life requiring active intelligence, without having been able to secure the advantage of the higher education, I would ask them how they could dispose of the same amount of time more profitably than in connection with this Society? It is when our youth are lovers and seekers of knowledge that our country is sure to flourish, whilst to the individual the pursuit is rewarded by the constant and varied gratifications it affords—gratifications which are inexhaustible, and independent of the changes of life, consequently above all price in the world which for a short time we occupy.

It is especially to be desired for a Society of lovers and promoters of knowledge, that it should interest, attach and encourage those who are coming forward in life, to whom we look to fill the places of those who must soon withdraw from the scene; and in seeking means of extended influence, nothing deserves more consideration than what will be beneficial to them both by enriching their minds and calling forth their talents.

I now proceed to a few words respecting the extent of subjects which various Societies, having in view the same general purpose as ours, include in their plans. Our Society has chosen its name in reference to the French National Institute, which it is well known has a remarkably wide range of subjects, including nearly all the departments of knowledge, but yet, being divided into classes and sections, is really in its working a collection of separate societies for all the different branches. We have placed no limits to our subjects, and have assumed the expediency of the cultivators of all the different branches of knowledge, uniting their efforts in one body. If we are right in this, as we think it will appear that we are, it must be from circumstances in the condition of the country, which give such a plan the advantage on the whole, though many would prefer narrower associations, which undoubtedly have their own recommendations. The Royal Society, in its earlier stages, had no well-defined limits to its subjects, often intruding on what

properly belonged to the still older Society of Antiquaries, giving much space in its transactions to details of cases, monstrosities, materia medica and other matters strictly belonging to medical science, and including botany, zoology and mineralogy, as well as mathematical and physical science; but affording no precedent for combining with these literature or intellectual moral and social sciences. When we consider the low state of science in that age, the very limited number of its cultivators, and the difficulty of communication, we cannot wonder that some time elapsed before the Society displayed much of that power which has since made it a benefactor of mankind. Considering the kind of difficulties which have ever presented the greatest obstacles to our own useful progress, it is amusing, and not without its lessons of prudence, to read in the history of the Royal Society, in reference to the year 1673, that whereas a few years before there had been about 200 members, in this year the number was only 146; and of these, 79 were persons who had long neglected to pay their subscriptions. It is added: "This great number of defaulters gave much uneasiness to those who wished well to the Society; and the latter, besides making pressing application for the arrears, seriously contemplated an attempt to enforce payment by legal processes." This attempt, however, never went beyond talk. Greater care was exercised in the election of members; and as the Society gained strength and importance, defaulters were heard of no more. Those whose necessities or altered tastes make them wish to withdraw, can always do so in a decent and orderly manner, by signifying their intention at a proper time. There is only good ground for complaint when individuals wish to be regarded as members, and to enjoy the advantages, yet will not pay sums which, though small in themselves, are absolutely necessary to the working of the Society. I remember, when I resided in London, and had an opportunity of noticing such things, that in the public meeting-room of the Linnæan Society was suspended a board, on which were inscribed the names of all members above one year in arrear; and it was absolutely forbidden to issue the publications of the Society to any Fellow whose subscription for the current year was not paid up. You see, gentlemen, that we are not alone in having this difficulty to contend with, and that there are means for controlling it.

But to return to the question of subjects. Among the new Societies which have arisen in many parts of Great Britain, extension of subjects has been carried to the utmost; whilst in the metropolis there has been

an abundant crop of those which are devoted to a single limited branch. A name frequently adopted, and in such a case peculiarly appropriate, is "Literary and Philosphical Soociety," which at once points to the wide extent of the subjects open for discussion; and where the simpler form of "Philosophical Society" has been preferred, the members are allowed freely to roam through literature and learning, antiquities and arts, as well as mathematical and philosophical sciences. I myself can never forget many delightful evenings spent at the Literary and Philosophical Society of Liverpool, with Roscoe and Traill, Rathbone, Curry and the Yateses, and a host of others, eminent as physicians, lawyers, divines, or merchants, and well prepared to discuss matters of science, learning, literature, taste or social interest, in a manner at once agreeable and improving. Nor less do I recur with the truest enjoyment to evenings spent at the Yorkshire Philosophical Society, where Mr. Vernon Harcourt, Professor Phillips, Mr. Allis, the comparative anatomist, my learned colleagues in the college with which I was then connected, Mr. Wellbeloved, who has thrown such light on the antiquities of York, and Mr. Kenrick, the acute and refined scholar and critic, with other able men, gave a never-flagging interest to the Society's meetings. On the other hand, I can testify from my own experience, that a Society confining itself to a particular branch, which all its members are supposed to be more or less cultivating, does by no means secure the uniform interest of its meetings, and may frequently be a direct cause of their being dull and unattractive.

If we try to reason on the subject, it will be evident that the Society whose plan is most comprehensive is most likely to afford something peculiarly interesting occasionally to every intelligent person, and to diffuse a taste for that varied culture which is at once ornamental and useful in a community, whilst a common organization saves the expense of many separate establishments. A common publication brings before the world what is judged most important in all the departments; and what is wanted in the way of special studies in any one science, is easily supplied by the votaries of that science holding additional special meetings as often as they deem useful, like the Sections of the French Institute, and availing themselves freely of the rooms and books of the general Society; whilst, if they find it necessary for purposes of their own, they can provide themselves with funds by a small additional subscription from the members of the particular section. The working of our Medical section shows the practicability and the convenience of

this plan; there is a good opening already for several others, and it might have been better if this method had not been departed from in any case of the kind. Where a large and wealthy population, including many cultivators of almost every imaginary variety of human knowledge, is collected together within a comparatively small space, there is inducement to the formation of numerous distinct Societies, though even then the advantages are by no means unmixed; but in a new country, with a scattered and not on the average a very wealthy population, all that can be said of the importance of the higher culture, and the general benefit arising from its diffusion, favors comprehensive plans as alone likely to be successful, as alone having even a chance of any wide support, or of exerting any extended beneficial influence. The cases of private clubs, for particular studies and pursuits, literary or scientific, are no more touched by these remarks, than if their objects were musical or merely social; but the formation of formal societies for the cultivation of distinct branches of science or literature, cannot be otherwise than an act of hostility against a more comprehensive association, which is at the same time seeking and prepared to welcome the very communications which are thus turned into a new channel. The question is, which plan is on the whole best? If our community is prepared to support various distinct scientific bodies, to enable them to publish their papers and carry out their separate plans, they have a right to try experiments. I tell them plainly they will not meet with the support they seek; and whatever success they do obtain will be so much strength drawn away from the Canadian Institute, a Society which aims at a wider usefulness, and has claims on the patronage of every man in the country who loves and values knowledge and culture—which offers to them all privileges, such as no limited body can pretend to afford.

I come now to a question as to the extent of country over which such a Society as ours may advantageously extend its operations. The Canadian Institute was designed by its founders to embrace the whole province of Canada as then understood, enrolling among its members the scattered lovers of knowledge, and collecting their communications as materials for its journal. It has at present members in various parts of Ontario and Quebec, none of whom it would willingly part from; but the new condition of public affairs forces us to re-consider our condition, and to form some judgment as to what course will be of most public utility, and will best advance our objects. We might possibly aspire to extend our operations over the whole Dominion, or be ready

at least to amalgamate with some new Society which might undertake to connect the science and learning of the whole Dominion in some common bond; but to this there exist such serious obstacles, that to hope to overcome them requires more enthusiasm than many of us possess, and after all the field would be too wide for a single moderate sized publication to do justice to all its parts, and the difficulty of agreeing about a common centre of management, the distance of the parts and (for the present) the difficulty of communication, would interfere with the success of the experiment. Giving up as hopeless, and attended with certain serious evils this wider plan, it seems evident enough that we must not pretend to provide for any wants of the Province of Quebec, but must withdraw within the bounds of Ontario. Is it possible for us to extend our useful influences within these bounds, or does prudence counsel taking the opportunity of confining ourselves to providing for the wants of this city, and its immediate neighbourhood? It seems to me that we have no right to confine ourselves within narrower limits than the Province of Ontario. So far as we are a publishing Society, the whole Province has an interest in knowing what we do, and studious men in all parts of it, have a claim on our pages, as being their proper access to the public for communications of a certain class, whilst it is obviously our object to make the journal express the highest thought and most original and important inquiry, carried on within our bounds, so far as their results can take a form suitable to our plans. The Province of Quebec has its own scientific journal, with which we cannot interfere; but we should be sorry to see our own immediate citizens driven beyond our bounds to find means of making known their discoveries and opinions, and whilst the Province of Ontario ought to furnish abundance and variety of material—it may be safely affirmed that for a considerable time to come, the multiplication of periodical publications, devoted to science and the more abstruse forms of literature, could only occasion pecuniary loss and the disappointment of all concerned. It may still be said that we have never obtained a large number of country members, and that it is natural that towns which are now rapidly rising in magnitude and importance, should provide intellectual resources for themselves, and have societies of their own. I answer it is desirable that they should, and they have our hearty wishes for their success; but since in union is strength, and since the attempt at separate publication could at present only result in evil, why should not all local literary and scientific societies, whether

their subjects be more less extended, make themselves parts of our Society, contributing for each member the lowest admissible price for the journal which all should receive, and disposing of their remaining funds according to their own plans; holding their own meetings, and sending such contributions, as they judge proper, to the editing committee of the *Canadian Journal.* There would then be no assumption of superiority in the central and older body. All would pursue the common object according to their own views of what is most useful or agreeable, and yet we should all be one body, and the journal would be a centre of interest to us all, as a common property which we should all desire to enrich. Ottawa, Kingston, Hamilton and London, either have already, or might at once have, societies which would be better in connection with ours, and other places are nearly if not quite ready to do something. Meantime our principle is that members out of Toronto only pay for the journal, which we think deserves the patronage of all our intelligent citizens; yet they enjoy all other privileges of membership whenever they can avail themselves of them, so that it is discrediting both their understandings and their patriotism, to say that they have no interest in joining us.

Allow me, in conclusion, to say a word or two on our own wants, and on possible improvements in our plans, in the immediate sphere of our action, independently of what I must always regard as one of our most important objects, the Society's Journal. We can benefit and gratify our members through our library, our reading room, our museum and our meetings. For our efficient working in all these ways, we require a convenient and suitable building in a very accessible situation. This has long been an object of desire to us, and attempts have been made more than once, but the difficulties have been found too great—nevertheless if we wish to keep up our influence and fulfil our proper mission, we must I am persuaded determine to succeed, and by energy and spirit carry through the work.

Our library which contains much that is valuable—several articles of great and remarkable value—is not to be considered safe, lying as it does in an ordinary frame building. Our museum such as it is, cannot be displayed, and of course cannot be increased. Our meeting-room is small for our ordinary meetings, which have not recently been very numerously attended, and if we did as we ought to do, would be utterly useless. We now possess a good site, central and large enough for any reasonable purpose, but we want premises which will enable us to

develope our plans, and we ought to work diligently towards securing them.

One of our practical wants is that our papers should give rise to more conversation, making our meetings more social, and that there should be more time and opportunity for general conversation. I am inclined also to think, that if a certain number of our meetings every season, were devoted to lectures by some of the members, on suitable subjects, literary or scientific, at which ladies might be invited to attend, we should thus make the character and objects of our Society better known; increase its useful influence, and contribute to the pleasure of our members. Our financial condition forbids any important immediate increase to our Library, or additional supply of our Reading Room, though it is not so bad as to prevent something being done which I hope will be immediately considered; but, to speak the plain truth, if those who call themselves our members, and who all ought to be with us, would only regularly pay their annual contributions, which if done regularly would be to them but a small matter, we should be well able to do many things which we now lament our inability to accomplish; and of course the more we did in this way, the greater would be the inducements to others to join us, as well as our own benefit from our association. As to our Museum, it is at present useless, and little else than a name. Personally, I am strongly impressed with the folly and wastefulness of multiplying museums in the same neighbourhood. The University of Toronto, which is a national institution, and opens all its advantages as freely as possible to the whole public, aims at a good general museum, both as a means of teaching the natural sciences in University College, and as a place for consultation of specimens and improving study to all lovers of natural history, as well as a pleasing recreation to all visitors. It is a matter of public and national interest to improve this Museum, which, if it had any funds for its increase, would speedily become highly valuable. For us to attempt a duplicate general Museum, would be absurd; and the few interesting productions of distant countries possessed by us, are really out of place with us, and wasted upon us. But there is something in this way which we might do, which would be both pleasing and useful. We might have a Natural History collection of the productions of our own Province. We might solicit our sporting friends to send us specimens of the mammalia and birds of our region. The fishes of our lakes and streams would not be less attractive, and a good deal more

novel. Our entomological friends would, I am sure, be proud to furnish us with our native insects. Our Curator would be happy in calling forth all the zeal he could, in bringing together our molluscous animals; and a botanical section might doubtless be organized, to make rural excursions to procure and preserve our native plants, from the noble forest tree to the minutest moss, lichen or fungus. Such a collection would be a constant source of instruction amongst ourselves, and would be most interesting and attractive to all strangers. It would be without a rival, and could never be regarded as what is not wanted, or as a pretension to what cannot be well accomplished. The sooner we can enter on this field the better, and I trust we shall enlist some good and active labourers amongst our members.

Gentlemen, I have gone beyond what I intended; I will only further say, that as in my capacity of a private member, I have, from my interest in your objects, and my real enjoyment of your meetings, been as constant an attendant as almost any of you, so, as far as health and strength will permit, I hope to be generally with you, anxious to participate in your proceedings as well as to render you any little service in my power. But except in my own loss, I can feel no uneasiness in being occasionally absent, being so well supported by the Vice-Presidents you have selected. If any effort of mine can assist our progress towards the position which we ought to occupy, you may rely on its being cheerfully made; and I entreat you all to give us, as often as you can, the advantage of your presence with us, and by the active part you take in our proceedings, as well as by any communication you can offer, whether or not of a kind that you would like to submit to the public in our journal, to show that you value the Society, and wish to develope all its power of usefulness.

NOTES ON LATIN INSCRIPTIONS FOUND IN BRITAIN.

Part XIII.

BY THE REV. JOHN McCAUL, LL.D.,
PRESIDENT OF UNIVERSITY COLLEGE, TORONTO, ETC.

76. "The Roman Wall, a description of the mural barrier of the North of England, by the Rev. J. Collingwood Bruce, LL.D., F.S.A., *3rd Ed. 1867," is a very handsome quarto volume, profusely illustrated by excellent lithographs and woodcuts. In it "the author has endeavoured to bring the work up to the present state of our knowledge upon the subject;" so that "this edition appears before the public as almost a new work." The Inscriptions that have been found along the line or in the neighbourhood of the Wall "are laid before the reader in an extensive series of engravings." * * * "In a few instances the letter-press and the woodcut illustrations slightly differ. Where an inscription is nearly obliterated, independent on-lookers will come to †different conclusions as to particular characters. The writer has expressed in type such letters as he himself saw, leaving the engraving to represent the views of the skilful and conscientious artist, Mr. Mossman, who prepared most of the original sketches." Not only are the illustrations considerably improved, but, also a large addition has been made to the number of the inscriptions that were figured in the second edition. Many of these, indeed, had previously appeared in the *Archæologia Æliana*, Horsley's *Britannia Romana*, &c., but they are here, generally, more distinctly or correctly given in superior representations, whilst others have never before been published. Of the renderings of inscriptions that have appeared in the second edition, or in the

*Published by subscription, at three guineas, by Andrew Reid, Newcastle-on-Tyne. The price will probably place the edition beyond the reach of many, but the book is well worthy of a place in every public library.

† This difference is often very perplexing to those investigators who, like myself, have seen only copies. Sometimes readings are given on the authority of personal inspection—and unquestionably in good faith—of which it may be said, in the words of Kirchhoff, relative to a Greek Epigraphist—"*Apparet—nonnulla quidem vidisse in lapide, quæ fugere testes ceteros, vidisse autem multa quæ scripta extare nemo sanus sibi persuadeat.*"

Archæologia Æliana, some are corrected and others are extended, and in some cases readings are given for the first time.

In a considerable number of these, Dr. Bruce has been anticipated in the pages of this *Journal*, and in "Britanno-Roman Inscriptions," *e. gr.* (in addition to those specified by him) in **Curatori*, in p. 64, in the partial restoration of the fragmentary inscription in p. 65, in † *Imaginifer* in p. 68, in the readings ‡ *Parthicis Medicis*, and *Coh.* 1.

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* A much improved woodcut is given in the third edition, of the stone bearing the inscription in which this word occurs. It now appears to be—

D M
AVR ? ? ENO
CVRATORI·ALAE
IIASTVRSTIPXV
ÆIO ? ENVSDEC
OSPPCE ? COS

Dr. Bruce expands it—

Diis Manibus Aventino (?) curatori alæ II Asturum stipendiorum XV, Æliomenus (?) Decurio. To the divine manes--to Aventinus the curator of the second ala of Astures, having served fifteen years, Æliomenus (?) the decurion [erected this monument].

In the second line Dr. Bruce has, inadvertently, omitted *Aurelio*, which seems to be clear. The reading of the other letters in the line is very uncertain. *Antheno* seems more probable than *Aventino*. In the fifth line I is within the O, and the letters in ligature after it seem to be ME, so that *Æliomenus* (or *Æl. Iomenus ?*) is not improbable. The appearance of COS at the end of the last line suggested to me the idea that the consular year was stated, but I have not been able to determine the names or name. OS, followed by PR (for the second P may be a relic of R), led me to think of *Sosius Priscus*, but this conjecture is not consistent with the remains of the other letters.

† If I had seen the woodcut in the third edition, representing the altar, in which IMAG=*Imaginifer* is found, I also should have read COH·II·DELMA =*Cohortis II Delmatarum*, but the woodcut in the second edition misled me, for in it the final syllables of the name of the cohort seem plainly to be ORVM. Hence I chose of the two cohorts known to have been at *Magna*, where the stone was found, *Hamiorum* in preference to *Delmatarum*. As I have adverted to the *Cohors Hamiorum*, known only from British inscriptions, I may mention that I have but little doubt that it was named in Hadrian's Diploma of 124. The letters are I..M·SALIN· I would supply HA as the two missing letters. On the meaning of SALIN I can offer no feasible conjecture, but it has occurred to me that it may possibly be a mis-reading of SAGIT., *i. e.*, *Sagittariorum*.

‡ In the third edition there is an excellent woodcut, representing this fragmentary inscription, by which my readings (*Canadian Journal*, 1865) seem to be confirmed—*scil. Antonino et* ——— (*Par*)*thicis Medicis*, and *I·Rætorum*. I had remarked, "It is plain from the epithets, *Parthicis*, *Medicis*, that the empe-

Rætorum in p. 237, in *L* = *Lingonum*, pp. 348, 349, and in others which it is unnecessary to mention. Dr. Bruce would, doubtless, have stated these, as he has specified other similar cases in the same publications; but the popular character of his work prevented him from specially noticing in every instance points that are of interest chiefly, if not solely, to scholars. This adaptation to the general reader is, indeed, a distinctive and very attractive feature of the book. On its claims in this respect to the attention of all who take an interest in the Roman period of British history, it would be both easy and agreeable to enlarge, but, as such a treatment of the subject would be inconsistent with my purpose in this series of articles, and unsuited to the wants of those for whom my Notes are intended, I shall limit my present remarks to the critical examination of those inscriptions which appear, as presented in this new edition, to be susceptible of emendation.

77. In some cases Dr. Bruce retains his former readings, although they seem to require correction.

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rors named were *Marcus Aurelius Antoninus* and *Verus*, and that the date is consequently A.D. 165–169." Dr. Bruce observes, "The inscription belongs to a period between A.D. 162, when the epithets, *Medicis*, *Parthicis*, were assumed by the emperors, and A.D. 169, when Verus died." There can be no doubt that his determination of the period is incorrect. The only question regarding the date as fixed by me is whether 166 is not preferable to 165. The latter is justified by Orelli's n. 359. The remarks on this subject in Merivale's "History of the Romans under the Empire," vii. p. 573, are not accurate. He says, "On the conclusion of peace in 166, he (Verus) hastened back to Rome, where Aurelius received him with open arms, and threw a veil over his want of personal prowess by conducting a joint triumph with him. The two emperors assumed the titles of Parthicus, Armeniacus and Medicus, though Aurelius refused, at first, a share in honours for which he had not personally contended." To this is subjoined a note: "Of these and several triumphal designations, Medicus alone, it is said, never occurs in medals or inscriptions, to avoid perhaps a possible misinterpretation." As Mr. Merivale's account might produce an erroneous impression, it seems necessary to state the facts. In 163, the title *Armeniacus* was offered to both Verus and Antoninus. The former accepted it, and it appears on his coins of the year, but the latter declined it for a time. In 164, *Armeniacus* appears on the coins of both. In 165, the title *Parthicus* was offered to both. Verus accepted it, and it appears on his coins of the year, but Antoninus declined it for a time. In 166, they were both styled *Parthicus* and *Medicus*. On the coins of Antoninus we find only two of the titles, either *Arm.* and *Parth.* or *Parth.* and *Med.*, but in some of those of Verus the three titles. The statement, noticed by Mr. Merivale in the note, is contradicted by the existence of several examples of *Medicus* both on coins and stones.

(*a*) In p. 170, we have the following inscription on an altar:

FORTVNAE
COHIBATAVOR
CVIPRAEEST
MELACCINIVS
MARCELLVSPRÆ.

Fortunæ Coh. I. Batavorum cui praeest Melaccinius Marcellus Præ [*fectus*]. To Fortune the 1st Cohort of Batavians, commanded by Melaccinius Marcellus the Prefect.

This expansion is the same as that given by Horsley, but as there is no authority for a *gens Melaccinia*, I think that the fourth line should have been read, *M. Flaccinius, i. e., Marcus Flaccinius*, as Dr. Hunter read it. Even if the second letter be E (not F), as Horsley thought, I should prefer *M. Elaccinius, i. e., Marcus Elaccinius. Elaccinius* may be regarded as another form of *Allecinius*. In p. 314, we have another misstatement of the *gens* in a different form. There *C. Cæp. Charitino* are expanded as in the second edition, *Caio Cæpione Charitino*, instead of *Caio Cæpio Charitino*.

(*b*) In p. 243, we have the following epitaph:

D M
AVRFFAIAE
DSALONAS
AVRMARCVS
ↃOBSEQCON
IVGISANCTIS
SIMAEQVAEVI
XITANNISXXXIII
SINEVLLAMACVLA

"*Diis Manibus Aureliæ Faiæ domo Salonas Aurelius Marcus* Ↄ *obsequio conjugis sanctissimæ quæ vixit annis xxxiii sine ulla macula.* To the divine manes of Aurelia Faia, a native of Salona, Aurelius Marcus, a centurion, out of affection for his most holy wife, who lived thirty-three years without any blemish, [erected this]."

I cannot accept the reading, *obseq*(*uio*) *conjug*(*is*), given by Dr. Bruce, as correct. The letters on the stone are *obseq conjugi*, and should, I think, have been expanded *obsequens conjugi*.

(*c*) In p. 273, an altar is figured, that bears the following inscription:

DEOSANCTO
SILVANOVE
NATORES
BANNES·S

Dr. Bruce expands and translates it as in the second edition:

"*Deo Sancto Silvano venatores Bannae sacraverunt.* To the holy God Silvanus the hunters of Banna have consecrated this altar."

This reading does not satisfy me. There is the same objection on the ground of Latinity to Dr. Bruce's *Bannae* in the sense "of Banna," as there is to his *miles Pannoniæ* as "soldier of Pannonia," in p. 231, and *civis Pannoniæ* as "citizen of Pannonia, in p. 220. If *Bannae* be the correct reading, the translation should be "at Banna." But I suspect that the word intended was *Banneses* for *Bannenses*, and that the *Venatores* were not mere sportsmen that hunted in that place or its neighbourhood, but that they belonged to the class of men that contended with wild beasts in amphitheatres, such as we know were in various parts of Roman Britain, *e. gr.*, at Chesters, at Housesteads, at Caerleon, &c. Thus we have in Henzen's n. 7209: *Coll. Venator. Deensium qui ministerio arenario fungunt*, where *Deensium* is the adjective formed from *Dea*, for the name of the place was *Dea Augusta*.

(*d*) In p. 309, we have the copy of an inscription to which I have always attached much importance, since I first saw it in the second edition:

"DIFFVSI
PROVINC
BRITANNIAAD
VTRVMQVEO
EXERCITVS

"*Diffusis provinciis* [*in*] *Britannia ad utrumque oceanum exercitus* [*fecit*]. On the extension of the provinces in Britain to either sea, the army erected this. As the inscription shown above is incomplete, the reading of it is in part necessarily conjectural; that which is here adopted was proposed by Brand."

It seems plain to me that this reading must be rejected, not merely on account of objection to the Latinity, but also because there were no provinces to be extended to the two oceans, *viz.*, those to the east and west of the island. If we compare with this inscription the *titulus* given by Tacitus, Annals, ii. 22—*debellatis inter Rhenum Albimque nationibus exercitum Tiberii Cæsaris ea monumenta Marti et Jovi et Augusto sacravisse*—we shall, I think, be inclined to regard this stone as erected by the army with a similar object as marking the completion of some important enterprise. It may be reasonably inferred that the word with which *diffusis* agrees (with, probably, the names of the deities

to whom the dedication was made), was on the * upper portion of the stone that has been lost. The question is, what that word can have been. *Hostibus* or *gentibus* would be an obvious suggestion, but I am not aware of any example of *diffusis* used with either of these, and, besides, neither seems to accord with *ad utrumque oceanum*. I am disposed to supply either *copiis* or *præsidiis* (which may be supported by Virgil, Æneid, xi. 465), or *castris, stationibus* or *prætenturis*, and to regard this stone as a memorial of the completion of the occupation of the isthmus between Solway Firth and the mouth of the Tyne by a chain of military posts. Jarrow church, where the stone was found, was at a short distance from Wallsend, *Segedunum*, but on the opposite side of the Tyne. The stone seems to have been taken across the river. In accordance with these views, I would read the inscription, (*castris* or *præsidiis*) *diffusis* (or *diffus. in*) *provinciâ Britanniâ ad utrumque oceanum exercitus, i. e.*, on the completion of military posts in the province of Britain scattered along the line from one ocean to the other, the army of——. After *exercitus* was, I think, the name either of the emperor or of the general in command. See Tacitus, Annals, ii. 22. On the stone there is the fragment of a letter that may have been N or M, and under ERCI of EXERCITVS are traces of letters resembling IIV.

(*e*) On the same page, we have an improved cut of a stone also found at Jarrow:

OMNIVM·FIL
HADR
ANICESCHAT
VATIS INCRR
II P ININC
II

The letters CESC in the third line, V and INC in the fourth line, and the first IN in the fifth line, are uncertain. Dr. Bruce remarks:

* There may have been there, for any thing that we know to the contrary, some such terms as MVRO PERFECTO PRAESIDIISQVE; but this is, of course, mere conjecture. I at one time hoped that the other inscription found in Jarrow church, when more fully deciphered, would throw light on the completion of the Wall; for, so far as I could trace the characters, it seemed to record something done by Commodus, Severus or Caracalla to something that bore the name of Hadrian. I even ventured to speculate that the word in that inscription after *Hadriani* might turn out to be *cespititium*, but, from the appearance of the inscription in Dr. Bruce's improved woodcut, that speculation has not been realized.

"All that can be said of this inscription (which is still more imperfect) is, that it seems to have been erected in honour of all the adopted sons of Hadrian, of whom Antoninus Pius, his successor, was one."

The expansion that has been adopted by Dr. Bruce is, of course, *omnium filiorum Hadriani*. The obvious question is, who were all these sons of Hadrian? He had none of his own, so that reference must be made to his sons by adoption, one of whom and the best known was *Antoninus Pius*. But who were the others? We know *L. Ælius Verus*, but there our knowledge ends. It is plain that *omnes* cannot have been applied to two, and the only way to get over the difficulty is to supplement the adoption of *Verus* and *Antoninus* by the addition of *M. Annius Verus* and *Lucius Verus*, who were chosen by Hadrian for adoption by *Antoninus*. Again, another question arises—how does it happen that Hadrian has none of the usual imperial titles? Even if the letters after ANI be CES, they cannot be regarded as standing for CAES = *Cæsaris*, for this title would not have been placed in such a position. It seems probable to me that FIL is a misreading for FEL, the first three letters of FELICISSIMI. The name and titles of the emperor were on the upper part of the stone, which has been lost, and that emperor was, not improbably, *Commodus*, *Severus*, or *Caracalla*.

(*f*) In p. 401, we have a copy of an inscription in Iambics, found at Carvoran. The last three verses are—

> "*Ita intellexit numine inductus tuo,*
> *Marcus Cœcilius Donatianus militans*
> *Tribunus in Præfecto dono Principis.*"

Dr. Bruce translates it thus:

"Thus hath understood, overspread by thy protecting influence, Marcus Cæcilius Donatinus, a warfaring tribune acting as prefect by favour of the emperor."

The translation is the same as that in the second edition, with the exception of the words, "acting as prefect by favour," which are substituted, as stated by Dr. Bruce in a note, in accordance with the interpretation proposed by me in Brit. Rom. Inscrip., p. 298. *Numine inductus tuo* does not mean "overspread by thy protecting influence," but "led to this conclusion," "persuaded" "by thy divine influence." Again, *militans* does not mean "warfaring," but simply "serving," so that the meaning of *militans Tribunus in Præfecto* may be more clearly expressed by "serving not only as præfect, but also as tribune." *Donatianus* (not *Donatinus*), whilst he was *præfectus equitum*, was allowed by the emperor also to hold the rank of *tribunus militum*, as

Henzen says—*re præfectus honore tribunus.* We have an example of this in the case of *M. Stlaccius Coranus* (Orelli, n. 5017), who was *Trib. Mil. Leg. II. Aug. Præf. Equitum Alæ Hispanorum in Britannia.* We may infer from the inscription of Donatianus, that there was an *ala* at *Magna* whose name is unknown, or else that the legion in which he was tribune was there, and we have a memorial of the presence in that place of at least one legion.

(*g*) In p. 407, an altar, found at Chesterholm, is figured. It bears the inscription:

DEONO
NEPTV
SARABO
SINO

Dr. Bruce remarks:

"It may be read DEO NEPTVNO SARABO SINO—to the God Neptune, of the bay of Sarabus. The second line not being long enough to hold the whole of Neptune's name, the last syllable of it has been added to the first."

Dr. Bruce has omitted to mention where this "bay of Sarabus" is to be found, and to adduce an example of the *metaplasmus* of *sinus* from the 4th to the 2nd declension.

78. In some cases, Dr. Bruce seems to me to have made a wrong choice between two readings. In the inscription on an altar figured in p. 280, the names of two persons are found, *viz.*, *Alb. Severus* and *Vic. Sevro.* In Brit. Rom. Inscrip., p. 13, I suggested, instead of *Albus Severus*, and *Victore Severo*, as given in the second edition of the Roman Wall, *Albius Severus* and *Victorio Severo*, but Dr. Bruce retains his expansions. My ground for the changes is, that where we have abbreviations of names before *cognomina*, those ending in *ius* should be preferred, unless we have authority in each instance for other forms. Sometimes either may be used, as in *nomina* ending in *nus*, *e. gr.*, *Sallienus* or *Sallienius*, *Pupienus* or *Pupienius*, *Alfenus* or *Alfenius.*

In the inscription given in p. 220, Dr. Bruce retains his *miles annos XVI*, although Mr. Hedley's *militavit annos XVI* is the correct expansion, and similarly *civis Pannoniæ* instead of Mr. Hedley's *civis Pannonicus.* In those inscriptions that have now for the first time appeared in the pages of "The Roman Wall," there appear to be similar errors in choice.

(*a*) In p. 136, we have a fragmentary epitaph, of which one of the lines is ISNORICIANXXX. In Brit. Rom. Inscrip., I expressed the

opinion that the words before *annorum XXX* were *civis Norici, i. e.*, a citizen of Noricum. Dr. Bruce, however, retains Horsley's *Noricus* as the name of the person. In support of my view, I may refer to *cives Norica*, in n. 825, "Rom. Inschrift. in Dacien," by Ackner & Müller.

(*b*) In p. 236, Dr. Bruce remarks, relative to the date of an inscription figured in p. 235:

"Severus Alexander became sole emperor in 222, and was assassinated in 235."

In Brit. Rom. Inscrip., p. 156, I had fixed the year with, I think, certainty, to 225, the date of the consulship of *Fuscus II.* and *Dexter*.

(*c*) In p. 331, two of Horsley's inscriptions are joined, so as to form one, in the belief that the stone had been broken into two pieces.

"DEOMATVNO
PRO·SALVTE·

BONOGENERIS
HVMANIIMPE
RANTE·C****
****
AVG·PR·PR·POSVIT
AC·DEDICAVIT
C·A·CÆCILIO?A???

Deo Matuno pro salute [Antonini Cæsaris nati]? *bono generis humani imperante C***** [leg.] *Aug. Pr. Pr. posuit ac dedicavit C. A. Cæcilius.* To the God Matunus, for the safety of Antoninus Cæsar, born for the good of the race of mankind; by order of ———, imperial legate and proprætor. It was erected and dedicated by Caius Aulus Cæcilius (?)."

Dr. Bruce remarks:

"The name of the emperor for whose welfare the dedication was made, and to whom is applied the proud but not unprecedented title of "born for the benefit of mankind," is lost, in consequence of the fracture of the stone. It is here supplied, in accordance with a suggestion made to the writer by his friend, Mr. Roach Smith. There can be little doubt that one of the Antonines—probably Caracalla—was intended. The god Matunus is not elsewhere mentioned."

On the probability of the two stones being portions of one, and of the inscription being thus broken betwen them and a missing portion, I shall offer no remark, as I have not seen either of those that exist. My impression, however, is in favor of Horsley's view, that the two are not fragments of one stone; and, even if they are, I cannot accept the proposed restoration, for there is no authority for the bare form, *Antonini Cæsaris;* and I think that the emperor, whose name is lost, was not one of the Antonines, as I have never met with an example

of *natus pro bono reipublicæ* or *generis humani* before the time of Constantine. With regard to the inscription on the lower stone, I adhere to the opinions stated in Brit. Rom. Inscrip., p. 142, that "*imperante* agreed with the lost name of the emperor, forming an ablative absolute. The name of the *Leg. Aug. Pr. Pr.*, in the third and fourth lines, was in the nominative case, being the subject of *posuit*. C. A., in the last line, stand for *c(uram) a(gente)*, or *c(urante) A(cilio)*." I must, however, withdraw my closing remark—"*Acil* are the first two syllables of *Acilio*, which was followed by the *cognomen* now obliterated," for it now appears that the letters on the stone are *Cæcil*, not *Acil*, as given by Horsley. Objections may reasonably be made, not merely to the order of the terms according to Dr. Bruce's interpretation, but also to the * two *prænomina* of the person named in the last line. As to the usual order, see Orelli, nn. 3275, 3329.

(*d*) In Brit. Rom. Inscrip., p. 154, § 70 is devoted to the consideration of an altar, which Dr. Bruce expanded and translated thus:

"DIISDEABVSQVESE-
CVNDVMINTERPRE-
TATIONEMORACV-
LICLARIAPOLLINIS
COH[ORS] PRIMATVNGRORVM.

"The first cohort of the Tungrians (dedicated this structure) to the Gods and the Goddesses, according to the direction of the oracle of the illustrious Apollo."

My remarks are:—"I have no doubt that I, in CLARI, stands, as is common, for II; and that CLARII is the well-known epithet which Apollo derived from *Clarus* (near Colophon in Ionia), where he had a celebrated temple and oracle. It is scarcely necessary to cite illustra-

* There are several examples of two *prænomina* (see Marini, Atti Arval. i, p. 234) but they are not common any where, and are extremely rare in Britain. In the inscription given in p. 332, we have M. G. SECVNDINVS, which, if the reading be correct, can scarcely be read otherwise than *Marcus Gaius*. The single letter G, however, may stand for *Gaius*, meaning of the *gens Gaia*. Thus Dr. Bruce reads S. VAPOLLINARIS, in p. 361, as *Sextus Valerius Apollinaris*, regarding BR in smaller letters above the V as standing for *Brocavi*. I doubt, however, whether it is not better to read VABR as standing for *Vabriue*, i. e., *Sextus Vabrius Apollinaris*. See p. 205. As I have adverted to *prænomina*, I may mention that the centurion named in the inscription, given in p. 111, was, probably, not *Marcus*, but *Manius Liburnius Fronto*, although the character on the stone differs from that ordinarily used for *Manius* by having Λ, not V, as the addition to the M.

tions from ancient authors. Amongst the most obvious are, Virgil, *Æn.*, iii, 360, "Que tripodas, *Clarii* lauros, qui sidera sentis," and Tacitus, *Ann.* ii, 54, "Relegit Asiam appellitque Colophona, ut *Clarii Apollinis oraculo uteretur.*" Dr. Bruce, in the third edition, retains the reading *clari* and the translation "illustrious," observing in a note on the word:—"Dr. McCaul prefers reading '*Clarii*,' from the well known epithet which Apollo derived from Clarus in Ionia." It is, I think, but reasonable, under the circumstances, to ask Dr. Bruce for authority to prove the application of the epithet *clarus*="illustrious" to Apollo, especially in connexion with one of his oracles.

79. I now proceed to consider some other inscriptions that have appeared in "The Roman Wall," for the first time in the 3d edition.

(*a*) In p. 211, an altar is figured, which bears the following inscription:—

FORTVNAE
P R
C. IVL RALTICVS LEG̅ VI VIC

Dr. Bruce expands and translates it thus:

"*Fortunæ populi Romani C. Jul. Ralticus* [*C*] *leg. VI. Vic.* To the Fortune of the Roman people Caius Julius Ralticus, a centurion of the sixth legion the victorious."

This expansion is the same as that given by Horsley. I am not satisfied with it. I prefer *Fortunæ Primigeniæ*, or, possibly, *Prænestinæ*. I am inclined to think that the name was not *Ralticus*, but *Rœticus*. *i. e.*, that the third letter was E, not L. There is no ground for supplying *centurio*. Where the rank is not stated, it may be assumed that *miles* is omitted, of which examples are not rare.

(*b*) In p. 234, a stone is figured that bears the following inscription:

ID·MSALVTE
PERVICAE FILIAE.

Dr. Bruce expands and translates it thus:—

"*Diis Manibus pro salute Pervicæ filiæ.* To the Divine Manes for the welfare of Pervica, our daughter."

To me it seems more probable that the letters before *salute* were MD.M, *i. e.*, *Magnæ Deorum Matri*, or, possibly, ID.M, *i. e.*, *Idææ Matri*. See *Canadian Journal*, x. p. 97. *Pervica* seems to have been sick, and this stone was set up for the recovery of her health.

(*c*) In page 245, an altar is figured, that bears the following inscription :—

FORTVN
AVDAC RO
MANVSO
LEGVI·XX
AVG

Dr. Bruce expands and translates it thus:

"*Fortunæ Audactus Romanus* ↄ Leg. VI. XX. [II] AVG. [Dedicated] to Fortune [by] Audactus Romanus, a centurion of the sixth, twentieth and second legions."

He also offers the following remarks:

"An altar, which belongs to this station (*Magna*), has been dedicated to Fortune by Audactus (?) Romanus, who seems to have held, no doubt successively, the office of centurion in all the British legions—the sixth, the twentieth and the second, styled the August."

This expansion is the same as that given by Horsley, except the substitutioc of *Audactus* for *Audacius*, which Dr. Bruce declined accepting, probably because there is no example of a *gens Audacia;* and yet his *Audactus* is almost equally unprecedented, and has the additional defect of being a *cognomen*. On the erroneous opinion that the same person could not hold the office of centurion in different legions at the same time, it is sufficient to cite Henzen's n. 6779, where we learn that the offices of *primipilus* in one legion and *princeps* in another were held at the same time by one person. The words are, *ita ut in leg. X. primum pil. ducent* eodem tempore *princeps esset leg. VI.* My view, however, of this inscription is, that it marks the erection of the altar, not by a centurion, but by the legions themselves. I would expand it, *Fortunæ Audaciæ Romanæ votum solverunt legiones VI, XX, II Augusta.* In the third line there was, probably, * L or LL over II in the fourth. *Audaciæ Romanæ* may be in either genitive or dative, *i. e.*, "To the Fortune of Roman Daring," or "To Fortune, to Roman Daring." I prefer the first. See Orelli, n. 2131.

(*d*) In p. 270, two inscriptions, both found since the publication of the second edition, are figured. They are unfortunately imperfect.

(1)
IBRVTVS
DEC AL PET

(2)
LVCA
AEFALAEAVGVSTAE
PETRIANAETORQ⊐CR
D D

* If the character read by Mr. Mossman as O is really ↄ, then VSↄ may be *votum solerunt centuriones*, &c.

Dr. Bruce expands and translates them thus:

(1) *Junius ? Brutus Decurio Alæ Petrianæ.* Junius Brutus, a decurion of the cavalry of Petriana. (2) *Lucanus Præfectus Petrianæ Torquatæ Milliariæ Civium Romanorum.* Lucanus, Præfect of the ala styled Augusta and Petriana, rewarded with the torque, consisting of 1000 men, Roman citizens, dedicated this."

In the expansion of (1), I can scarcely be taken as standing for IVNIVS. Was it the second upright of N, *i. e.*, IVN? The translation is likely to deceive, for there was a place in Britain called *Petriana*, whose site still remains unidentified. "A decurion of the Petrian cavalry regiment," or "of the cavalry regiment styled Petriana," seems preferable. In (2) LVCA certainly does not stand for LVCANVS. It is more probably *Luca*, the birth-place of the Præfect. The only peculiarity in either inscription is the use of the term *torquata* in (2). Dr. Bruce remarks that "it does not occur in any other British inscription. Probably the prefect, for some deed of valour, on his part or that of his troops, was allowed, like Titus Manlius of old, to wear a twisted band of gold around his neck; or the torque may have been attached to the banner of the ala. The Ala Petriana occurs in the Riveling rescript* of the date of A.D. 124." I am inclined to think that neither of these explanations of the mode of indicating that the regiment had won the distinction of being *torquata*, is correct. I rather think that every man in it was entitled to wear a torque as a badge of honor, not improbably with some differences as to the metal. See Vegetius, ii, 7, and Pliny, *Hist. Nat.*, xxxiii, 15.

We have evidence, as Dr. Bruce mentions, that this *ala* was in Britain in A.D. 124, and a plausible inference from (2) suggests itself, that this corps was in the island at an earlier period, either before or in the time of Trajan, for from Orelli, n. 516, we learn that this *ala* was styled *bis torquata*, *i. e.* twice decorated with the torque in his time; and the absence of *bis* in this inscription may be regarded as proving that it was cut before the regiment won this badge of honor for the second time. I am not disposed, however, to make this deduction, for reasons that will hereafter appear. Another inference, and of some importance, may, I think, be drawn from (2). The regiment is called

* Dr. Bruce, apparently following Mr. Roach Smith, calls the *Tabulæ honestæ missionis*, that have been found in Britain, "rescripts." This term should not have been used, as it is likely to mislead scholars who have not examined the subject. No example of the documents styled *Imperatorum Rescripta* has been discovered in the island, nor any thing at all resembling them.

Augusta. Now, there is no evidence that this title was borne by any *ala* known to have been in Britain, whilst there, except one, called only *ala Augusta*, in inscriptions found chiefly at Old Carlisle. Horsley identifies, on insufficient grounds, this *ala* with the * *ala* I *Herculea*. I am inclined to identify it, on the authority of (2), with the *ala Petriana* and to regard the use of *Augusta* alone as manifesting the proud assumption that it was unnecessary to use any other designation to identify the corps, and distinguish it from other *alæ* serving in Britain. It (the title *Augusta*) does not appear in the inscription given in Orelli, n. 516, where the regiment is called *alæ Petrianæ milliar. C. R. bis torquatæ*. Hence we must choose between two hypotheses, either that *Aug.* was omitted in this inscription, or *bis* in (2). Of these I think the latter much the more probable, and, identifying the *ala Petriana* with the *ala Augusta*, suspect that it got the title *Augusta* for services under *Ulpius Marcellus*. In the two earliest memorials of the *ala Augusta scil.* of the years 188 and 191, the words *ob virtutem appellata* added to *Augusta* seem to indicate that the title was then recent. Similarly on an altar of 242 we find *ob virtutem appellata* following *Gordiana* when this title of the *ala* had been recently obtained. This identification of the *ala Petriana* and *ala Augusta*, and the knowledge that the majority of the memorials of both have been found at Old Carlisle, Carlisle, and Old Penrith, suggest the conjecture that we must place *Petriana* — as we cannot find a probable site for it within a reasonable distance from *Amboglanna*—in one of these places or in their neighbourhood. Long ago, Camden, on different grounds, regarded Old Penrith as *Petriana*. Old Carlisle seems to have stronger claims, and there are those, perhaps, who, notwithstanding the identification by many of Carlisle with *Luguvallium*, would assert the right of that city to the site, especially

* There is great uncertainty about this *Ala I Herculea*, or *Herculia* as it is otherwise written. In that part of the *Notitia* which relates to Britain, it is said to have been at *Olenacum*, but in other parts of the same work it is said to have been at three different places, in Africa and Asia.

It is not easy to reconcile these statements. It seems to me very improbable that there were several *alæ primæ Herculeæ* in the sense "first of the Herculeans." I suspect that after *ala prima* had been originally the name of the people, and that when it got the title from Maximian, *Herculea* was put in place of that name. I should be disposed, therefore, to identify the *ala prima Herculea* of Britain with one of the *alæ primæ* that served in that island, *e. gr.*, *Ala I Thracum*, *Ala I Pannoniorum*, *Ala I Tungrorum*.

as the station that may be assumed to have been there would otherwise be omitted in the list of posts *per lineam valli*. Is the name of the river Peterell in any way connected with *Petriana?* And does the plural form—"*Petrianis*"—indicate that the *ala* was quartered in more than one camp or station along its course?

(*e*) In p. 61, Brit. Rom. Inscrip., I have noticed the different meanings of the term *decurio*. We have examples of the use of the term in the third edition of "The Roman Wall," on which some observations may be useful. In p. 283, the abbreviations DEC PRINC are expanded by Dr. Bruce, *Decurio Principum*. There is no authority, so far as I am aware, for such an office, whether civil or military. *Decurio principalis* seems to me a preferable expansion. See Henzen's Index, p. 153. In p. 127, Dr. Bruce finds another *decurio* in the inscription: *Deo L. Sentius Castus leg. VI. D. P.* He reads *Decurio posuit*, and remarks in a note: "The letters D. P. can only be conjecturally extended. Something is wanting to show the dedicator's position in the legion: *decurio* (the commander of a troop of ten horsemen), the term here suggested, does this. The initials have sometimes been read *dedicat pie.*" I have no doubt that the reading *Decurio posuit* cannot be justified. I would suggest *de peculio*. See Brit. Rom. Inscrip., pp. 61, 92, and Orelli, n. 4416. As to the remark—"Something is wanting to show the dedicator's position in the legion"—it is sufficient to observe that such an omission is common. See n. 79 (*a*)., and p. 307.

(*f*) In p. 283, a grave-stone is figured, that bears the following inscription:

D M
GEMELLIC·A·
FLHILARIO·S·H·FC

Dr. Bruce's remarks are:

"In consequence of the incorrect representations of the inscription that have hitherto been given, the last two letters of the word *Gemellica* being separated from the rest, and a full stop after each, great has been the perplexity of those who have attempted to read it, and various the interpretations that have been given of it. Gemellica, it must be confessed, is a name which we have not previously met with. *Diis Manibus. Gemellica Flavio Hilario sepulchrum hoc fieri curavit.* To the divine manes. Gemellica to Flavius Hilarius caused this sepulchre to be erected."

If the reading *Gemellica* be assumed as correct, I would read the inscription thus:—"*Diis Manibus. Gemellica. Flavius Hilario secundus heres faciendum curavit.*" *Gemellica* may be in the nominative, or

may stand for *Gemellicœ*. *Hilario* is a name that occurs more frequently than *Hilarius*, and *secundus heres* is not uncommon. See Orelli, nn. 3416, 3481. The head, however, which is carved below the inscription seems to be rather that of a man with a beard, than of a woman with a head-dress. Hence I would suggest, instead of *Gemellica*, GEMELLI·C·A., *i. e.*, *Gemelli custodis armorum*; and this I regard as the most probable rendering.

(*g*) In p. 325, 3rd edition, we have the following account of a sepulchral stone, there figured, which was found near the station at *Bremenium*, High Rochester:

"Besides the Varduli, we have a trace of the Breuci at this station, or at least of their prefect, who had formerly also been commander of a cohort of Lusitanians. The funereal stone, represented in the annexed engraving, and which is now built into the chancel of Elsdon church, was found in 1809, in a field opposite the north-east corner of the station. The upper part of the inscription, unfortunately, came off in flakes, when the stone was raised, leaving a distinct impression of the letters on the clay. The number of the cohort on this slab is indistinct; it is probably II, or perhaps III, but there is not room for IIII. The Breuci were a people of Pannonia. This is the only distinct notice that we have of them in Britain, unless tiles which have been found at Slack, in Yorkshire, bearing the stamp of COH. IIII. BRE. refer to them. Probably the husband of Julia Lucilla was brought from Rome to superintend the roads in this district. He was evidently a man of considerable importance. This is the first time we meet with the office of 'alimentarius' in a British inscription."

The following is the inscription:

* * * * *
* * * * * * *
* * * * * * * * *
* * * * * * * * * * *
* * * * * * * * * * AVG * *
LVSITANOR ITEM COHII
BREVCOR SVBCVR VIAE
FLAMINIAE ET ALIMENT
SVBCVR OPERVM PVBL
IVLIALVCILLACFMARITO
BM VIX AN XLVIII
M VI DXXV

Dr. Bruce expands and translates it thus:

"[*D. M.*] [*Præfecti cohortis I*] *Aug*[*ustæ*] *Lusitanorum item cohortis II.* (?) *Breucor*[*um*] *Subcur*[*atoris*] *viæ Flaminiæ et aliment*[*orum*] *Subcur*[*atoris*] *operum publ*[*icorum*] *Julia Lucilla c*[*uravit*] *f*[*ieri*] *marito b*[*ene*] *m*[*erenti*] *vix*[*it*] *an*[*nos*] *XLVIII m*[*enses*] *VI. d*[*ies*] *XXV.*

"To the divine manes —— of the prefect of the first cohort, the Augustan, of the Lusitani, also of the second cohort of the Breuci, subcurator of the Flaminian way, and of the distribution of maintenance, subcurator of public works, Julia Lucilla had this erected to her husband well deserving. He lived forty-eight years, six months and twenty-five days."

For this reading of the inscription, of which Hodgson gave a very incorrect copy, we are indebted to Borghesi, who proposed it in *Bull. Inst. Archeol.* for 1851, whence Henzen gives it in n. 6513. The only part of it that seems liable to question, after examination of the woodcut of Mr. Mossman's drawing, is *cohortis I Augustæ Lusitanorum;* and yet I have but little doubt that the reading is correct. Dr. Bruce's idea that "we have in the inscription a trace of the Breuci at this station," is not supported by examination of the words. Nor is his conjecture that "the husband of Julia Lucilla was brought from Rome to superintend the roads in this district," at all probable. We may, I think, reasonably assume that the offices given after *item* were not held by him at the time of his death or during his residence in Britain. He may have been, at the time of his death, †præfect of the first cohort of the Lusitani, although we have no evidence that this corps was ever in Britain. And yet I suspect that the office or offices that he held at that time were stated in the upper part of the stone, and that he was *Tribune* of some other cohort, perhaps *I Vardulorum*, for he seems to have been ‡*Rufinus*, the tribune, for the health of whom, and of his wife *Lucilla*, an altar was erected at this station. See Horsley's n. xcvi, and Brit. Rom. Inscrip., p. 140. The duties of *curator viæ* and *præfectus alimentorum* were united in one office. Henzen notices the rarity of the office of *subcurator*, and cites *Dig.* III, 5, 30, for examples in *municipia*. The deceased was *subcurator viæ Flaminiæ et alimentorum et operum publicorum* certainly in Italy, and probably at Rome. Dr. Bruce's ex-

† There is no ground for Dr. Bruce's *præfecti;* the word, expressing the commanding officer of both the cohorts, *viz.*, of *Lusitani* and *Breuci*, may just as well have been *tribunus*.

‡ In p. 395, Dr. Bruce's Roman Wall, 3rd edn., we also find *Rufinus*, the name of the præfect of the *ala* called *Augusta*. This, possibly, may have been the same person. The commanding officer of an auxiliary cohort is styled either *præfectus* or *tribunus*, but of an *ala*, *præfectus equitum*, or simply, but not usually, *præfectus*. There are examples, but extremely few, of *tribunus* being applied to the commanding officer of an *ala*. My conjecture that the name of the deceased was *Rufinus*, and that he was tribune of the first cohort of the *Varduli*, seems to be borne out by faint traces of letters in the upper part of the stone.

pansion of CF—*curavit fieri*—is not correct. The letters stand for *Clarissima femina*, and are not found elsewhere, so far as I recollect, in a British inscription.

(*h*) In p. 332, the altar is figured that bears the inscription, from which it was inferred that the ancient name of Risingham was *Habitancum*. I have treated the subject in the note, p. 147, Brit. Rom. Inscrip., and I now take it up again in consequence of a new reading of the text given in Dr. Bruce's copy. The following is the inscription as given by him:

MOGONTCAD
ET·N·D·N̄AVG
M·GSECVNDINVS
BF·COSHABITA
NCCIPRIMASTAT
PROSEETSVISPOS

Dr. Bruce expands and translates it thus:

"*Deo Mogonti Cadenorum et Numini Domini Nostri Augusti Marcus Gaius Secundinus Beneficiarius Consulis Habitanci prima statione pro se et suis posuit.* To the god Mogon of the Cadeni, and the deity of our Lord Augustus, Marcus Gains Secundinus, a consular beneficiary at Habitancum, the first station from the Wall (?), erected this for himself and his family."

The objections to this expansion, which is the same as that given by Horsley, are, that there is no authority for *Habitancum* as the name of a place in Britain, and that we should have had *primæ stationis, i. e.*, PRIMAE, not PRIMA. To these must be now added, that in the fifth line the letters are CCI, not CI. This difference seems to me so important, that I do not hesitate, on this ground alone, to reject all previous expansions and interpretations, including that which I doubtfully suggested in Brit. Rom. Inscrip., p. 147; but it is by no means easy to determine the true explanation of the unusual forms found here. The following inscriptions will, I think, help us in arriving at the meaning: *Et plebei collegi Concordiæ Augustianorum familiæ castrensis Alexander Marcellianus et Encolphius Domitianus* Cubiculari stationis primæ *D. D.* Henzen, n. 7191. *Ælio Aug. lib. Glauco* Cubiculario stationis primæ. Zaccaria, *Istituzione antiquo-lapid.* p. 329. *L. Vibio Fortunato L —— Haruspici Aug. N. Magistro a studiis Proc.* Ducenario Stationis *hereditatium*. Mommsen., *Inscrip. Neapol.* n. 3948. See also Gruter, 575, 3, and *de off. D. A. L.* iii, 29, cited by Marini, *Atti Arval.* 504, *a*. It appears, then, that CCI may stand

for *Cubicularii* or *Ducenarii*. Of these the †latter seems to me the more probable. See Orelli, nn. 3182, 3342, and my ‡Notes, *Canadian Journal*, x, p. 96. We may now reasonably infer that we have the genitive case, *ducenarii*, and we must find the word governing it. N at once presents itself, used, as it not unfrequently is, for *nomine*. *Habita* then remains, which seems to form with *prima statione* an ablative absolute. But what is the meaning of *Beneficiarius Consularis habita nomine Ducenarii prima statione? Statio* is used not merely as a military post, but also as the place where the payments to the emperors, *e. gr.*, of taxes and duties on legacies, were made to officers appointed to collect them. See Henzen, nn. 6537, 6551, 6339. These *stationes* were often under the charge of *ducenarii*, and sometimes *beneficiarii* were appointed to discharge the duties. On this point Forcellini compresses much information in a few words. *Hujusmodi beneficiariis militibus varia officia posterioribus temporibus assignata fuisse leguntur. Nam et exhibitio cursus publici et vectigalium exactio, reorum conquisitio, et alia id genus munera iis demandabantur, ut est apud Tertull.* de fug. in persecut. *c. penult. lib.* 8. *Cod. Theodos. tit.* 4 *leg.* 7, *et Spartian in* Adrian. *cap.* 2 *ubi vide quæ adnotavit Salmas.* With regard, then, to the words, *Beneficiarius Consularis, nomine Ducenarii, statione*, there can, I think, be very little doubt as to their signification; but the meaning of both *prima* and *habita* seems doubtful. The sense

† *Cubicularii* is recommended by its connexion with *stationis primæ* in the examples that I have given from Henzen and Zaccaria, and also by another noticed by Marini *scil. a frumento cub. Cæsar. N. Stat. I*, taken from an inscription, which is given in full by Fabretti, p. 369. If we adopt this reading, a wide field of speculation is opened out. Was this *Cubicularius* a chamberlain of the emperor or a chamberlain of apartments for the sick? If we take the first, then *prima statione* may be interpreted with Marini, "*ultima anticamera*," *i. e.*, the ante-room nearest to the emperor's apartment; and we can readily associate this inscription with a supposed visit of an emperor, *e. gr.*, Hadrian, to the post at Risingham. If we take the latter, we may suppose that there was a military hospital at this post, and that *prima statione* is equivalent to our "first ward." The interpretation that I have given above seems to me preferable to either of these.

‡ When I wrote the remarks to which reference has here been made, I was not aware that the inscription was given by Muratori, 895, 6, and noticed by Marini, *Atti Arvali*, p. 297. The first proposes *Mensor ex castris* or *castrensibus Imperatoris*, and the latter *Mensor ex Circuitoribus*. I adhere to my own suggestion as the most probable.

may be, having held or managed the tax-station, numbered as first; or having held his first collection of taxes, *i. e.* having for the first time discharged the duty, on behalf of the *ducenarius*, of collecting the taxes. *Nomine ducenarii* seem to signify "in the name of the *ducenarius*," rather than "with the name *ducenarius*."

On the significations attributed to *habita*, we may compare *ambitiose avareque* habitam *Hispaniam* in Tacitus, *Annals*, iii, 13, and the common *comitiis* habitis, *delectu* habito. The use of *prima* with *statio* in the sense numbered as "first," may be supported by *stationis* primæ, in the examples that I have given, but it must be borne in mind that *statio* there seems to mean ante-room. Moreover the order of the terms is different from that in the inscription. I know no example of *statio* in the sense "collection of taxes," but I believe such a use of it to be consistent with Latin usage, *e. gr.*, such as that of *tabulæ*, not for "registers," but for "registration."

(i) In p. 350, an altar is figured, bearing the following inscription:

NVM·AVG·ET
GEN. COH. I·F
VARDVLORVM
CREQ⋈SVBAN
TISTIO ADVENT
OLEG·AVG·PRP
F·TITIANVSTRIB

"*Numinibus Augusti et Genio Coh. I. Fidæ Vardullorum civium Romanorum eq.* (*X*) *sub Antistio Advento Legato Augustali Pr. Pr. F. Titianus tribunus posuit.* To the deities of Augustus and the Genius of the first cohort, the faithful, of the Varduli, consisting of Roman citizens, having cavalry, a thousand strong, under the auspices of Antistius Adventus, imperial legate and proprætor, Flavius Titianus the tribune erected this altar."

To this Dr. Bruce adds the following note:

"Dr. McCaul, in the *Canadian Journal* for September, 1865, gives this inscription, and says, 'I am persuaded that this stone was not found in England: from Orelli, n. 1270, we learn that C. Antistius Adventus was legate in Germany.' Dr. McCaul on this occasion certainly errs. In a letter to Roger Gale, dated 17th May, 1735, Dr. Hunter, of Durham, says it was 'found lately at Lanchester, within the ancient fortification, having its bottom broken off, and the initial letter of the last two lines.' He further states, it was to be taken to Greencroft. Hutchinson's Durham, vol. ii, p. 364. Hodgson, whose residence at Lanchester made him peculiarly familiar with its antiquities, quotes this passage and says: 'It is yet at Greencroft.' Poems, p. 99. It was removed from Greencroft to Chesters two years ago."

The following is the passage in the *Canadian Journal*, to which reference is made in the preceding note:

"Found at Lanchester, Durham, according to *Mus. Ver.* ccccxlv., 9, and Orelli, *Inscrip.*, n. 3403.

NVM·AVG·ET
GEN·COH·II
VARDVLORVM
C·R·EQ·M·SVB·AN
TISTIO ADVEN
TO LEG·AVG· PR· PR·
* * * TIANVS TRIB

i. e., Numini Augusti et Genio Cohortis secundæ Vardulorum civium Romanorum Equitatæ Miliariæ sub Antistio Advento Legato Augusti Pro Prætore—tianus Tribunus.

I am persuaded that this stone was not found in England. From Orelli, n. 1270, we learn that *C. Antistius Adventus* was legate in Germany."

Dr. Bruce's statement as to my view is positive, but surprisingly inaccurate. He seems not to have observed that the inscription as given by me from Orelli is not identical with that given by him from the stone that is now at Chesters. They differ in this very important particular, that in mine the cohort is the second, in his the first. Now my opinion was almost wholly based on this difference. If Maffei's and Orelli's copies had given COH·I·VARDVLORVM, I should have unhesitatingly accepted their statement that this stone was found at Lanchester, for I knew that the first cohort of the Varduli had been in Britain (see *Brit. Rom. Inscrip.* pp. 139, 157, 160, 161), although I could discover no trace (on *stones) of the second having served there. I thought of emending II by reading I·F·, *i. e., prima fida*, but in both Maffei's and Orelli's copies the characters II were distinct, and the latter, moreover, placed a line over II, *i. e.*, $\overline{\text{II}}$, clearly indicating the second. Moreover, I found that Maffei's reading COH·II· had been accepted by Marini, Atti. Arval. p. 22, and Cardinali, Diplomi, p. 157. My persuasion, then, as stated in the *Canadian Journal*, is confirmed, not disproved, by Dr. Bruce's copy of the original, for no stone, bearing the inscription as given by Maffei and

* In Trajan's Diploma, A. D. 106, the second (if the reading of the *Monumenta Historica Britannica* be correct) is mentioned as at that time serving in Britain, but no other memorial of it, so far as I know, has been found in the island, and I venture to suggest that the number in the plate is $\overline{\text{I}}$ not $\overline{\text{II}}$. I cannot accept, with any confidence, the authority of that volume on epigraphic points.

Orelli, and copied from them by me, has ever been found in England. If I had seen, or could have consulted the authorities cited by Dr. Bruce, *viz.*, Hutchinson and Hodgson, I should, of course, have formed and expressed a different opinion.* I searched all the books to which I had access, where I might expect to find some account of the inscription, *viz.*, Horsley's *Britannia Romana*, Camden's *Britannia*, ed. Gough, *Monumenta Historica Britannica*, Dr. Bruce's Roman Wall, 2nd edition, Mr. Wright's Celt, Roman & Saxon, and various periodicals, but I could discover no trace of it—not even of the name *C. Antistius Adventus*—in the lists of Governors of Britain. My examination on the subject was the more strict, as I suspected that a person named *Antistius Adventus* had been in the island, otherwise I could not account for the suggestion (in *Monum. Hist. Brit., Index*, p. cxlvi.) of these names as a reading for those of the person † now ascertained to

* In some cases Dr. Bruce seems to have overlooked authorities that might easily have been consulted. In p. 390 we find the statement:—"Mr. Roach Smith suggests to the writer that the deity associated with Jupiter is V[V]LKANVS, Vulcan." This is no new suggestion. The same view was taken in 1848 by the Editor of the *Monumenta Historica Britannica*, n. 24 *b*, and before that by the Rev. Mr. Mathews, in the *Gentleman's Magazine* for 1842, p. 598. A more remarkable instance occurs in the note, p. 112, where Dr. Bruce remarks:—"After much consideration, the author is, at length, constrained to adopt the views of Dr. Musgrave and of Henzen, and to read [V·V· applied to the 20th legion] *Valeria, Victrix*. The following examples seem decisive. Dion Cassius, speaking of this legion being then in Britain, denominates them Οὐαλέρειοι καὶ Νικήτορες; and in the continuation of Orellius by Henzen, Nos. 6680, 6871, we have *Valeriæ Victric.* and *Valeriæ Victricis.*" Dr. Bruce is mistaken as to Musgrave's opinion: it was, that the first V stood for *Valeriana*, not *Valeria;* and Henzen has not discussed the subject, In his Index he gives *Valēria Victrix*, as a matter of course, for no living Epigraphist on the continent of Europe, so far as I am aware, has given any other expansion for V.V. in connexion with the 20th legion. The passage from Dion Cassius, in illustration of the titles, has often been cited; and the reference to Henzen's nn. 6680, 6871, in which the epithets are *in extenso*, was first given by me in note p. 4, Brit. Rom. Inscrip., where I have briefly discussed the subject in explanation of my rejection of the reading *Valens Victrix* adopted by Orelli, Horsley and Bruce.

† I may, I trust, be pardoned for expressing my gratification that my conjectural reading — *Oclatinio* — has been found to be correct on re-examination of the stone. The only doubt that now remains is as to the group of tied letters between O and O, after *Vangon*. I adhere to the opinion that I expressed relative to them, merely changing *operibus perfectis* into *opere perfecto*, as the last letter has been proved to be O, not S as it was formerly given. Is there any trace of the tail of R under the P? If so, the group will comprehend all the

have been *Oclatinius Adventus*. When I failed in finding any trace in Britain of *Antistius Adventus*, I of course turned to the records of other countries, and soon found that a person of this name, mentioned in Orelli's n. 1270, had been legate of Augustus and Proprætor in Germany or Gaul. As I have adverted to the difficulties that I encounter in treating inscriptions found in Britain, I may be permitted to observe that I have never seen the originals, and have been able to get but few rubbings or photographs, so that in examining unsatisfactory readings or interpretations, (and my notes are limited almost exclusively to such cases), I have usually to find out or conjecture the true reading from the illustrations or printed copies, or comments of authors, who often fail to give correct representations of the originals, sometimes from accidental mistakes in copying, but not unfrequently from imperfect acquaintance with epigraphic language and forms, or even from want of common knowledge of ordinary Greek or Latin.

(*k*) The use of the preposition *sub* with *Consulibus*, in the sense "under," or "in the year of," is well known. So also is its use with *Legato Augusti*, and in the *tabulæ honestæ missionis*, in the sense "under the command of." Dr. Bruce, I know not why, varies the translation of the preposition. In p. 16, we have "under the direction of;" in p. 350, "under the auspices of;" in p. 322, "under the authority of;" and in p. 114, "through the influence of." There is not one of the things mentioned in those pages, in which the legate seems in any way to have interfered. "Under" seems quite sufficient as a translation, and, if it should be desirable to add to this, "serving under" may be used in those cases in which military bodies or persons are named.

(*l*) In p. 373, we find the following statement relative to Roman remains found at Papcastle:—

"Another altar has more recently been found, bearing a similar date, and dedicated by a *Numerus Frisionum Aballavensium*, a designation which it is exceedingly difficult to comprehend." The difficulty, to which Dr. Bruce refers, is not as to the meaning of the words, for they plainly signify "the detachment of Frisiones stationed at Aballava." The *Frisii*, or *Frisiones*, regarded by some as identical with the *Frisianones* or *Frisiavones* or *Frisævones* or *Frixagi*, are well known as a portion of the Roman auxiliary troops in Britain. The 1st cohort was

letters required—PERE and PERFECT—by taking the semicircular part of the P (or R) as representing C.

there in A.D. 106, in A. D. 124, and at the beginning of the fifth century, as appears from the diplomas of Trajan and Hadrian, and from the *Notitia*. *Aballava* is also well known as a place in the island, although there are various opinions as to the identification of the site. In the *Notitia*, a detachment of Moors, called Aurelian, is said to have been stationed there. Nor is there any difficulty as to the use of *Aballavensium*. We have similarly *Numerus exploratorum Nemaningensium*, Henzen's n. 6731, *Numerus Brittonum Triputiensium*, Orelli's n. 1627, and *Numerus exploratorum Bremeniensium*, Bruce's Roman Wall, 3rd edn., p. 315. See Brit. Rom. Inscrip. p. 139. Dr. Bruce's difficulty as to the inscription, I apprehend, is that if the same principle,* by which High Rochester has been recognized as *Bremenium*, on account of BREMEN and BREM in inscriptions on altars found there, be applied in this case, we must identify *Aballava* with Papcastle. If this be adopted, the views as to Brampton and Watchcross must be abandoned, and great latitude must be given to the terms *per lineam valli* in the *Notitia*. For the present it must suffice to have noticed the difficulty. At some future time I hope to examine the general question relative to the stations after *Amboglanna*, and to offer some suggestions, that may, perhaps, be useful, even though in some cases expressed doubtfully, as I have not the advantage of personal knowledge of the localities.

(*m*) In p. 414, we have the following inscription, on a stone at Netherby:

· D · M
TITVLLINIA
PVSSITTA·
CIS·RAETA
VIXSIT·
ANNOS· XXXV
MENSESVIII
DIES·XV·

Dr. Bruce expands and translates it thus:--

"*D*[*iis*] *M*[*anibus*] *Titullinia Pusitta ci*[*v*]*is* (?) *Rœta vixit annos xxxv, menses viii, dies xv.*

"To the divine Manes, Titullinia Pusitta, a native of Leicester, lived thirty-five years, three months, [and] fifteen days."

The inscription seems simple; almost the only doubtful point appears to be as to CIS, and of this, I think, Dr. B.'s expansion should be

* See Brit. Rom. Inscrip., note, p. 138.

received. But it is astonishing that he should have entertained the interpretation of RAETA that he has given *scil.* "of Leicester." The Latin term for Leicester is *Ratæ*, not *Rætæ*. The word clearly designates the woman as one of the people, called *Raeti*, who lived near the Alps, about the region now called the Tyrol.

We may, probably, find a reason for the presence of this female at Netherby, *castra exploratorum*, when we recollect that at Birrens or Middleby, *Blatum Bulgium*, about 12 miles distant, there were *Cives Rœti*, serving in the 2nd cohort of Tungrians stationed there. See *Brit. Rom. Inscrip.* p. 244. But there is another interesting point in this epitaph, *viz.*, the name of the woman—*Titullinia Pussitta*. *Pussitta* seems to be a term of endearment—"little pet"—perhaps, derived from the Latin **pusillus*, *pusa*, to which also I would trace the name *Pusinna* in the following inscription given in the Roman Wall, 3rd edn., p. 231:—

D M
DAGVALD·MI
PAN·VIXIT·AN
PVSINNA
TITVL

Dr. Bruce expands and translates it thus:—

"*D. M. Dagvald*[*us*] *mi*[*les*] *Pan*[*noniæ*] *vixit an*[*nos*] *Pusinna*[*conju*]*x titul*[*um*] [*posuit*].

"To the divine Manes. Dagualdus a soldier of Pannonia lived years — Pusinna his wife placed this memorial."

No exception can justly be taken to the phrase *titulum posuit*, for, as Dr. Bruce remarks, it is not uncommon in continental epitaphs. The resemblance, however, of *Pusinna Titul*—— to *Titullinia Pussitta*, suggests the suspicion that we have in the two epitaphs the same names, with a slight variation in one of them. As some letters intervened between *Pusinna* and *Titul*, and there seems to be on the stone the relic of an X before the latter, Dr. Bruce suggests *conjux*. Even if we accept this, *Titul* may be the beginning of *Titullinia*, the name of the daughter, who united with her mother in the erection of the memorial. Although I have thought it better to mention this interpretation, I am inclined to prefer the obvious expansion—*titulum posuit*.

* Thus we have in Christian inscriptions (De Rossi, nn. 556, 572,) *Pisinnus* and *Pitinnus*, and even *Pitzinina* (n. 404), the ancient form of *Piccinina* and *Pizzinina*. Should we trace to the same root our use of *Pussie*, as a pet name of a little girl?

As I have cited the epitaph of Dagvald, I may mention, in emendation of Dr. Bruce's expansion, that the Latinity of *miles Pannoniæ* in the sense "a soldier of Pannonia" is, as I have already remarked, objectionable. It is probable that on the missing portion of the stone was COH·I, *i. e.*, COH·I·PAN, the first cohort of Pannonians, which, we know from one of Trajan's diplomas, was in Britain in 106.

(*n*) In p. 147, a slab is figured, that was found in the ruins of the ancient bridge across the North Tyne. Unfortunately, only a very small portion of the inscription remains:

RA.V. EST****
RANTEAELIO
LONGINO
PRAEF· EQQ

Dr. Bruce expands and translates it thus:

"*Restituit? curante Ælio Longino Præfecto Equitum, i. e.*, restored under the inspection of Ælius Longinus, a præfect of cavalry."

This is, no doubt, satisfactory, so far as it goes, and, probably, is all that can be made out with certainty. Some conjectural readings, however, have occurred to me that seem worthy of being mentioned. RAM* as the last three letters of ARAM, is an obvious suggestion, which should at once be accepted, if the stone were an altar or the part of one. But as it seems to be merely a panelled slab, we must look for some other explanation. Were the letters RANA, the N and A being tied as the R and E were? If so, we may supply *Ala I Thracum Vete, i. e., Veterana.* The term *ala* may be regarded as certain, and if *Veterana* be admitted, the terms *I Thracum* may be inferred, for, so far as I know, this is the only *ala* that served in Britain that had this title. The *Ala I Thracum* is mentioned in Trajan's diploma of the year 104, and a memorial of it has been found at Watermore. In the diploma of Aurelius and Verus, of the year 167, this *ala* is named as *Ala I Thracum Veterana*, and it was then serving in Lower Pannonia. See Cardinali, Diplomi, p. 239. My conjecture is that it got the title

*On the supposition that the letters were RAM, other readings may be suggested. They may be the last three letters of *terram, i. e., supra terram scil.* above ground (see Orelli, n. 589); or of *straturam*, the pavement (see Orelli, n. 4130, Henzen, nn. 6609, 6612, and Reinesius, p. 298); or we may read *structuram* or *fulturam* (see Facciolati *in verb*), &c. Whatever we supply, we may assume that the *ala* (for the rank *Præfectus Equitum* implies that the corps was an *ala*) was the *Ala II Asturum*, which was stationed in the neighbourhood, at *Cilurnum.*

Veterana before it left Britain, and thus that the date of this slab must be placed between 104 and 167. This first cavalry regiment of Thracia n had also the title *Augusta*, which was probably given to it by Nerva. See Henzen's n. 5439. There is no memorial of it, however, in Britain, in which this title was used. At the time the *Ala Petriana* was called *Augusta* (see 79, *d*), the *Ala I Thracum*, so far as is known, was not in the island, nor is there any evidence that it was ever sent back there, unless, indeed, we identify the *Ala I Thracum* with the *Ala Thracum Herculania*, and that with the *Ala I Herculia* of the *Notitia*.

AMERICAN LITERARY FORGERIES.

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Amid the varied literature of England's eighteenth century, two noticeable but very diverse features attract the attention of the curious student. First in time, as in real worth, is the rise of a spirit of sound literary criticism, beginning with Nicholas Rowe's "Shakespeare" in 1709, and expanding with ever increasing power and acuteness until a juster estimate of the great Elizabethan poets was followed by the revival of a taste for simple natural poetry. Pope's school ended with the first generation of feeble imitators of that great master of poetic art; and a growing conviction developed itself that the so-called "Augustan Age" of Queen Anne might be fitly matched with that which Virgil and Horace adorned, and yet be inferior to more than one elder age of English literature. It was while canons of taste and principles of literary criticism were thus being reduced to form, that a series of literary maskings, or forgeries, appeared, which could only have been perpetrated in an age of recently revived taste for antique literature.

Elizabeth, Lady Wardlaw, of Pitreavie, began the ingenious literary masquerade by her "Hardyknute," a heroic ballad, professedly derived from an ancient parchment found in a vault of Dunfermline Abbey. By and bye Macpherson followed with his "Fingal," "Temora," and other Gaelic epics; Percy, with his half spurious "Reliques of Ancient

English Poetry;" Chatterton, with his "Rowley Poems," recovered from an old chest in St. Mary Redcliffe Church, Bristol, the work of an imaginary priest of the reign of Edward IV.; and so the deceptions proceeded with more or less ingenuity and poetical genius. In prose also an equal success was achieved. Charles Julius Bertram, a youth of English descent at Copenhagen, palmed on Dr. Stukely his "De Situ Britanniæ," as a manuscript of Richard of Cirencester, a monk of the fourteenth century; and not only did it deceive that credulous dupe, but antiquaries and historians of the highest class continued to quote, and appeal to its authority, for nearly a century. The ingenious frauds culminated at last in the forgeries of Ireland, who not only produced a contemptible play of his own writing, styled "Vortigern and Rowena," as one of Shakespeare's lost dramas, but had it accepted by Chalmers, Boswell, and other literary authorities, and actually produced as such on the stage at Drury Lane.

The history of this peculiar phase of the literature of England's eighteenth century, with the volumes of critical controversy it gave birth to, curiously illustrates the transitional stage in which, while a better taste was reviving, the requisite knowledge had to be mastered, and the first principles of criticism were undetermined. Warton, Bryant, Milles, Walpole, Chalmers, and a host of other literary men, are found publishing volumes of controversy about professed antiques, which would now be discarded as spurious by the merest tyro in early literature. But just as the revival of learning had to precede the rise of an original native literature in the sixteenth century: so, in that eighteenth century the taste for the antique, with its spurious creations, preceded alike the return to a higher standard in poetry, and a just and critical estimate of early English literature.

In this New World we are passing through an analogous stage, and accompanying it with the production of not a few spurious antiques, modeled to suit the taste of our own day; though European critics seem scarcely alive to what is transpiring in America's nineteenth century. Vague fancies of the lost Atlantis; of analogies and synchronisms between Egyptian and Mexican antiquities; of Phœnician, Punic, or other remotest relations between the Old World and the New, had been floating dimly before the minds of American antiquaries: when the publication of the *Antiquitates Americanæ* by the Antiquaries of Copenhagen, gave shape and consistency to this pleasant dreamland. It was no longer Egyptian hieroglyphics, or Punic inscriptions that had

to be looked for. Was not Dighton Rock, in Massachusetts—which the Rev. Dr. Ezra Stiles, had shown in 1783, to be graven in the old Punic or Phœnician character and languages—proved by the Danish Antiquaries of 1837 to be in the Runic character and Norse language? The fancy was welcome to thousands. Learning and critical judgment were for the most part scant enough, but faith and zeal abounded; and if a sceptical doubter appeared on American soil, the high court of final appeal at Copenhagen pronounced against him without fail. So the famous "Grave Creek Mound Inscription" turned up opportunely on the banks of the Ohio, and gave occasion to a world of fine writing, and learned disquisition. An axe inscribed in linear characters was found at Pemberton, New Jersey, and submitted to the American Ethnological Society; and rumours of similar inscriptions, from time to time, furnished sensational paragraphs for the press.

But after a while the Dighton Rock itself fell into disrepute. The believers in its Runic legend got laughed at for their credulity; and the antiquaries of the West fell back on their old search for the lost Ten Tribes. Mr. David Wyrick of Newark took the lead in this revived quest, and ere long Harper's "Weekly Journal of Civilization" delighted its readers with a facsimile of "The Ohio Holy Stone," a masonic key-stone as it proved to be, graven in Hebrew characters, and older than the days of Solomon. But this was a bagatelle to what followed. The results of the indefatigable zeal of the Newark antiquaries showed what invaluable treasures await the researches of the American archæologist, when once rightly directed. The most marvellous disclosures were rumored from time to time. But wonders could go no further, when at length, in 1860, there turned up in an Ohio mound a new version of the Ten Commandments, graven on a tablet of stone, in antique Hebrew; and it became obvious, ere long, that the actual grave mound had at length been discovered in which Moses, the servant of the Lord, was buried, of which, for two thousand three hundred years, it had been truly said "No man knoweth of his sepulchre unto this day."

It was obviously difficult to achieve much more in this direction. The great American war, moreover, came ere long to occupy men's minds with more earnest thoughts; and so the mounds of the west were left once more "to dumb forgetfulness a prey." But the spirit of faith, and the uncritical credulity of an active but uncultured inquisitiveness, were by no means quenched. The lost Ten Tribes and their Hebrew

chroniclings passed into disrepute, and American antiquaries of the sensational type resumed their search for runic inscriptions.

With the thrilling incidents of the great conflict between North and South, the Potomac had become an historical river to the civilized world; and so the antiquarian field of research changed its ground, and there appeared in June, 1867, in the *Washington Union* a wonderful account of discoveries just made in that neighborhood by "Thomas C. Raffinnson, Fellow of the Royal Society of Northern Antiquaries of Copenhagen." Professor C. C. Rafn was the great authority in the *Antiquitates Americanæ*, for the Northmen's Vinland, Huitramannaland or Whitemen's Land, Irland il mikla, or Ireland the great, &c.; and so Raffinn-son now fitly followed up his discoveries.

This learned Northern Antiquary was, it seems, on an exploratory tour in the States, though unheard of by the worshipful mob of lion-hunters; and so he writes to the *Union*, "Permit me through your columns to publish the details of the discovery, near the city of Washington, of the remains of an Icelandic Christian woman, who died in the year 1051, and of the inscription in Runic characters which marks her grave, the announcement of which has already spread by telegraph through the New World to the Old." The learned Antiquary proceeds accordingly to comment on the historical importance of a disclosure which confirms the discovery and extensive explorations of the American Continent by the adventurous Northmen, five centuries before the landing of Columbus. It gives, he says, "another illustration of the great length of time it requires to write an accurate and truthful history;" and he therefore craves the readers' indulgence in favour of his present narrative, begging them "to await the publication, within the coming year, of the full account of my archæological researches in the Orkneys, Iceland, America, &c., wherein the more copious text will be accompanied with maps and drawings."

But a marvellous preliminary discovery has to be first related, quite in the old eighteenth century style, though surpassing even Lady Wardlaw's recovery of an antique parchment from the Dunfermline Abbey vaults. "In 1863," writes the Danish explorer, "in digging about the ruins of the ancient college at Skalholt—said to have been built in 1057 by Bishop Isleif,—in Iceland, the Latin MS., bearing date 1117, and now known as the Skalholt Saga, was exhumed entire." What opinion European archæologists would be likely to form in reference to this idea of digging up a manuscript seven or eight

centuries old, as perfect as though it were an old coin or a flint arrow-head, might be easily predicated one would think. Of this, however, we shall be able to produce an illustration. But, for our New World antiquaries at least, while their zeal is unmatched, their knowledge is most frequently on a par with those of the eighteenth century critics from whom Ossian, Rowley, and Richard of Cirencester, obtained so undoubting a welcome; and so this supposed exhumation of a perfect manuscript saga of the twelfth century was received with the same mild wonder as that with which Catcott or Barrett accepted from the Bristol charity-boy, lyrics, epics, and whole dramas of an unheard-of poet of the days of Henry VI. and Edward IV. In just such a happy stage of innocent faith, Jack-and-the-Beanstalk, Tom Thumb, and all the fairies and giants of the nursery, delighted our childhood. They are to be envied, for whom its pleasant dreamland has not yet faded into the light of common day.

An abstract is accordingly given, in the *Washington Union*, of the contents of the new found Saga. If any one among the genuine antiquaries and scholars of America, already familiar with the *Antiquitates Americanæ*, did turn to this new revelation, in the first blush of its novelty, with faith in its possible genuineness, his mortification must have been great to find that it only reproduced the old story, already familiar to him, of Vinland, Huitramannaland, the encounter with the Skraelings, the determination of latitude by observations on the length of day and night, &c. The actors have new names, and the scene is shifted from Mount Hope Bay to the Chesapeake; but the piece is, as a whole, only the old play under a new title. The inventive faculty, indeed, appears to have been of the meagerest for such an undertaking. With a Defoe, a Swift, or even an Edgar Allan Poe, for the modern skald, the story might have proved a lasting addition to our New World literature. And yet there is internal evidence enough to make one suspect that the masker is, if not a fellow countryman of the witty Dean of St. Patrick's, at any rate one of those American-Irishmen, whose hereditary patriotism is apt to crop out at times in such odd ways.

The Saga, we are told, "is a most remarkable story, apparently written by a monk, and purports to give an historical account of the explorations of the Icelanders in the new found Vinland, and in the country to the south and west, called Huitramannaland Irliland Mikla, or great Ireland," which is spoken of as having been long before

discovered, and visited repeatedly by the Irish. "This is a most important statement," adds the narrator: who, forgetting at the moment that he is masquerading in the guise of a learned Dane, assures his readers that all the glory which the Copenhagen antiquaries have been apportioning to their Norse ancestry, is, by their own showing, due to an Irish Columbus. For "there are numerous allusions in the Sagas, and even in the Landnamaboc, of unimpeachable veracity, of this earliest discovery of America by the Irish."

But this is by the way. The main narrative runs to the effect that a voyage was undertaken, under command of Hervardur, along the coast of Huitramannaland in a southerly direction. They explored the coast; ascended various rivers, and at length getting into what must have been the Potomac, they pushed up it, until their progress was finally barred by a succession of falls, "to which, from their general shape and foamy appearance, they gave the name of Huidœrk, or White-Shirt:" both the Norse and Irish rovers of the eleventh century being, no doubt, very particular about the clear-starching of their linen. The narrative now becomes a little more graphic. These White-Shirt falls receive a special notice in the old saga, "for it is stated that, in their neighborhood, the illegitimate daughter of Snorri, who was born in Vinland, and was a son of Karlsefne,"—already celebrated in the genuine narrative of Professor Rafn,—"was killed with a small spear or arrow, and buried near the spot where she fell." Now Sir Thomas Murray,—to whom the Skalholt Saga was referred by its discoverer, Mr. Philip Marsh, and by whom it has recently been translated into English,—has conjectured that the sea, here spoken of as receiving the waters of several large rivers on its western shores, and up which the adventurers seem to have sailed, is the Chesapeake Bay; and from some observations as to the length of the days and nights by which the latitude was determined, he supposed that the White-Shirt Falls were the great falls in the Potomac River above Washington. This, indeed, we are told he mentioned as the merest fancy, to which no importance could be attached. But the learned Danish traveller, Mr. Raffinnson, is able to confute such diffident modesty, and indeed to turn the results of such conclusions to account for robbing his own Norse ancestry of their highly prized honours as the first discoverers of America; for he says: "It is now permitted me to say that the authenticity of the Skalholt Saga being indisputably established by the recent discovery of the very grave of the daughter of Snorri, the speculations of this learned gentleman

are proved to be correct. The confirmation of this Saga will also clinch the theory that the Irish were the first Europeans to discover the continent of America." How this latter conclusion, so gratifying to all Irishmen, follows from the premises, is not very obvious: unless, indeed, the mere difference of a letter between Ireland and Iceland is to be ignored, as too insignificant a trifle for notice by any candid mind. But we have Mr. Raffinnson's assurance that it is so; and when a learned Dane, with such self-sacrificing disinterestedness, makes the assertion, it is not our part to challenge it.

With this strangely recovered historical document of the twelfth century in his mind, Mr. Raffinnson, on reaching the United States, very naturally proceeds to Washington, and pushes on to the Great Falls of the Potomac, "to ascertain if any traces of the visit of Hervardur were to be found;" and sure enough, here is the very inscription, in even better counterpart of the original Saga than the famous Dighton Rock record of Thorfinn and his fellow explorers, who, according to the Thorfinns Saga, accompanied Karlsefne's expedition to Vinland, or New England, in A.D., 1007. Such curious coincidences are not uncommon in romance; but in a grave historical confirmation of such obsecure chroniclings "materially affecting history," they do startle one a little.

In 1863 the Skalholt MS. was dug up, none the worse for its seven and a half centuries' exposure to damp and decay. On the 28th of June, 1867, Mr. Raffinnson, in company with M. Louis Lequereux and other learned associates, including "the distinguished geologist, Professor Brand," had "the happiness and satisfaction," on scraping away some lichens, to find "on the north-east side of the large rock commonly called the 'Arrow-Head,' on the Potomac river, two miles below the Great Falls, and about thirteen miles above the city of Washington," the very "White-Shirt inscription" of A.D. 1051, they were on the look-out for, with its record of Snorri's illegitimate daughter, Syasy the fairhaired. With its assigned restorations, and rendered in Roman letters, it runs thus:

HIR HVILIR SYASY FAGRHARDR AVSTFIRTHINGR IKI A KILDI SYSTR THORG SAMFETHRA HALFTHRITGR GLEDA GVD SAL HENAR XMLI

Which, according to its learned discoverer, reads, "Here rests Syasy the fairhaired, a person from the east of Iceland, the widow of Kjoldr,

and sister of Thorgr, children of the same father, twenty-five years of age. May God make glad her soul. 1051." Thereupon follows a great display of learning. "This remarkable epitaph, it seems, is written in the ancient style of runes, known as the Nevok, a variety found only in the Orkneys and the isle of Barljof,"—a statement somewhat startling when one remembers that the eleventh century is anything but ancient for runic writing. Then the description of these peculiar "Nevok" runes: "easily recognised by being the most regular, the deepest cut," &c.; shows that they present "by far the most ancient variation, though it was employed with remarkable purity on monumental stones in the Orkneys, as late as the fourteenth century;" —all which must be surprising to Orkney antiquaries, above all others; unless indeed Mr. Raffinnson, in passing through Orkney, made some wonderful discoveries there also, unheard of before or since. The wonder has always been that, notwithstanding the occupation of the Orkneys by Northmen for centuries, no single monumental stone graven with runic characters is known to exist there; and no runic inscription of any kind had turned up, till the exploration of the Maeshowe by James Farrer, Esq., in 1861, brought to light a splendid array of them. But it would not be easy to describe anything less like the Maeshowe runes than is assigned in the above characteristics. It has already been remarked in the "Prehistoric Annals of Scotland," "The Runic inscriptions on the Manx crosses are regularly and sharply cut with a chisel; whereas the most of the Maeshowe graffiti are slightly and irregularly scratched, as if with a nail." It is obvious that we must still await the long-delayed publication of the full account of Mr. Raffinnson's archæological researches in the Orkneys, Iceland, and elsewhere.

But another feature also rather startles the reader already familiar with former Runic discoveries. The inscription, though somewhat of a wordy jumble as a whole, begins and ends satisfactorily. The beginning is, indeed, the same as one well-known Greenland inscription, viz., that of Ikigeit; while, by a curious coincidence, the pious sentence with which it ends, occurs on another of the Greenland inscriptions from Igalikko, to be found in the same suggestive volume of the Danish Antiquaries; and, indeed, on the same page in others reproducing its contents.

Perhaps American archæologists were tempted by this to suspect a hoax, the darning and patch-work did look so undisguised. But before

we follow their example it is only right to peruse the learned discoverer's peroration. "No longer is the Huitramannaland a visionary Atlantis. No longer is the discovery of America by the Irish, in the dim distance of the panorama of history, pointed to as if by the spectre of a dream. Syasy, the fairhaired, as if gifted with the life of a Methuselah, has risen from her sleep of eight centuries, and traced on a rock, with an unerring finger, the distinct outlines of the fact, and confirmed her wonderful story with her ashes:"—for we ought to have mentioned sooner that two molar teeth were dug up, along with some bronze trinkets, and two Roman or Byzantine coins.

This "Extraordinary discovery on the Potomac" went the round of the American papers; with what amount of credit it would be hard to say. But no scientific or literary journal of note troubled itself with enquiries after the learned Dane; nor is it likely that any orders were sent home for Sir Thomas Murray's English translation of the Skalholt Saga, though such a book would seem a very fitting addition to American libraries. The story lived out its nine days' life, as another curious illustration of our young Western World passing through a phase analogous to that of England's eighteenth century fit of spurious antiques and literary forgeries, and so seemed on the high road to oblivion: when, lo! it makes its debut, as a genuine contribution to science, in the pages of an English scientific periodical.

The article is one of the curiosities of literature. In the *Washington Union* the masquerading is overdone, and provokes a smile at last by its extravagance. But in the London *Anthropological Review* for April, 1868, it reappears tricked out in so becoming a style that it probably failed at first sight to startle the intelligent reader, notwithstanding the novelty of the idea suggested by its title: "Icelandic Remains on the Potomac, near Washington." It is worth studying as a specimen of what choice terms can do even for a somewhat meagre fancy. The original American version runs very much in the old fashioned style of antiquarian news. But in the scientific resumé we read: "A very important contribution to the archaic anthropology of the American continent, interesting to the historian of the early migration of races, has just been made by Professor Thomas C. Raffinnson, of the Royal Society of Northern Antiquaries of Copenhagen, in the immediate vicinity of Washington, establishing beyond all doubt the early settlement of that district by inhabitants of Iceland, and confirming, in a signal manner, several statements made in the *Skalholt Saga*

of A. D. 1117, of Arnas Magneas." Then follows a fine version of the whole story of "the White-Sark or Shirt inscription." The editor very acutely draws attention to the word *samfethra*, "same father;" and puts the case with refined delicacy in this fashion. It "alludes to a laxity of morals probably prevalent, unless it is to be referred to a common descent from some more remote ancestor." *Halfthritgr* is explained as meaning half-thirty, a peculiarly Icelandic way of expressing "twenty-five years of age." The date, we are told, "is given in runic characters, as in many other inscriptions." Where they are to be seen is not stated. The MS. is merely said to have been found in the ruins; not "exhumed." Sir Thomas Murray and the Skalholt Saga are referred to in passing, as though everybody knew all about the distinguished scholar and his translation. "The White Shirt Falls were identified by Sir Thomas Murray," the reader is informed, "with the Great Falls above Washington, on the Potomac River, although the last-named gentleman"—Mr. Philip Marsh, no doubt of equally great European reputation, being the well-known exhumer of the Skalholt MS.;—"put forth his identification as a mere hypothesis at the time. That it was, however, exact, the discovery of the grave of the daughter of Snorri, and of some of her remains, has proved."

Who shall venture to laugh hereafter at Dean Milles or Bryant, with their old Rowleys; or even at Boswell on his knees before the "Vortigern and Rowena" MS., or the Shakesperian love letter to Anne Hathaway, with its veritable lock of the poet's hair? And yet this date of A.D., 1051, is a very modern one, considering the sort of antiquity with which archaic anthropologists have been wont to sport familiarly of late years. It is indeed a recent affair, compared even with Mr. David Wyrick's discovery of the grave of Moses, and its new version of the Ten Commandments. It is to be regretted that the latter should have escaped the notice of European savans. It would have been interesting to learn if it had any chance of a better reception in some quarters than the old Hebrew documents have of late been favoured with.

But American Runic Inscriptions are by no means exhausted. The mythic regions of the unexplored west furnish the most promising localization for such marvels. At present they are only effecting the passage of the Mississippi. Early in the present year, a sensational column in the *St. Louis Republican* invited American Archæology to concentrate all its acumen in that quarter, before modern progress

obliterates relics such as Layard and Botta could not match. Engineering science has brought all its latest appliances to bear for the purpose of bridging the Mississippi River; but only, if we are to believe this marvellous story, to discover that the thing had been much more effectually accomplished ages before. The excavations, it seems, were proceeding for the foundation of one of the main piers of the bridge, on the western side; a huge blast of gunpowder was fired by workmen engaged in blasting the rock, when, "instead of having to wait the usual time for the smoke to clear away, they saw it ascend rapidly in a column, as though issuing from the smoke-stack of one of our steamers." They had, in fact, blown up the roof of a wonderful "cavernous excavation;" which is fully described under the heading of "Prehistoric Remains in the west." Ropes, ladders, and torches were procured; and the writer of the narrative was "invited to accompany the Board of Engineers with a delegation from the Academy of Sciences and the Historical Society." He promises "a full exposition of the discovery, when he shall have made a more careful survey." Without waiting for this, however, his present abstract has marvels enough for the students of "Archaic Anthropology" and "the early migration of races." The subterranean passage, we are told, "passes entirely under the river to the Illinois shore, and whether it is wholly the work of some ancient race who once inhabited this land, whose interesting remains are strewn so thickly up and down this great valley, or whether it is partly natural and partly artificial, remains to be seen. In any case it is none the less stupendous. The main passage we should judge to be about twenty feet high by fifteen broad, and systematically arched overhead; part of the way by cutting through solid rock and part by substantial masonry. The bottom seemed to be much worn as if by carriage wheels of some sort. There are many lateral passages which of course, we had no time to enter. These are about eight feet high and six feet wide. In the main passage we saw no tools or implements of workmanship; but on entering one of the lateral branches we soon emerged into a large chamber supported by leaning pillars of solid rock when the chamber was excavated. Around the walls of this chamber there were what seemed to be niches closed with closely-fitting slabs, each slab covered with inscriptions in Runic uniform characters, which to our eyes bore a marvellous resemblance to those upon the slab in the Mercantile Library, which was brought from the ruins of Nineveh. Between the niches were projecting pilasters, with draped Assyrian or

Egyptian heads, which presented a most impressive and awe-inspiring effect as they were illuminated by the torchlight. Those sweet, sad faces looked down upon us from the ancient ages, like the souls of the departed. One of the passages opening on the north side seemed to follow the course of the river, and it is believed extends to the great mound, now being removed, on the North Missouri Railroad, which was the theme of much interesting remark at the last meeting of the Historical Society;"—was indeed, in all probability, the germ of the latter marvel. American mounds, it must be remembered, are very different affairs from the little mole-hills on which Sir Richard Colt Hoare and his successors have industriously toiled, with corresponding results. The American grave mound is an earth-pyramid approaching rather to the proportions of Silbury Hill than those of the ordinary Anglo-Saxon barrow. Its exploration is, therefore, no ordinary labour; and it would obviously never do for such a "parturient mountain" to produce no more than a broken pipkin, or some Indian arrow-heads. Something very different is looked for; and—unless the explorer is wholly ignorant of the duty he owes to the community,—has to be found, if not by actual discovery, then by interpretation. A theory of relationship between the special mound, and any others, however remote, is one of the simplest and most honest solutions of the difficulty. In one case the greatest satisfaction has been derived from the demonstration that the mound in question, when connected by imaginary straight lines with two others, some miles off, made a triangle, of which one of the angles approximated to a right angle. Had it only been proved that all the three angles were equal to two right angles, it would, no doubt, have demonstrated that pre-eminence of the lost science of the New World, of which no antiquary of the Great West entertains any doubt.

But to return to the narrative of the *St. Louis Republican;* much more follows in the usual thorough-going style of such New World discoveries. There is a mound, known as the Big Mound, about a mile above the bridge; another known as the Monk's Mound, on the other side of the river; and a whole chain of similar earth pyramids "extending from the river to the bluffs, a distance of nine miles. It is conjectured that the tunnel under the river and the mounds are connected, and that there was in ancient times an opening through the mounds from this subterraneous highway."

But leaving conjecture, one more bit of "personal observation" may

be worth noting. "As, in returning, we passed through the pilastered hall above described, we observed a descending opening about seven feet high by three feet wide. Following this in its windings about fifty yards, we came to a flight of forty-one steps, ascending which, we found ourselves in another chamber of wonders, oval in shape, about seven feet long, twenty feet high, and three feet wide,"—rather puzzling dimensions for an oval chamber. "The walls were sculptured in magnificent bas-relief and Runic inscriptions. Professor Bacchio, the learned Sanscrit scholar of the University, who was with us, has taken upon himself the task of translating the inscriptions. Of the meaning of some of the words and the colossal sculptures he speaks very confidently."

European scholars may possibly wonder that they have not before heard of this learned Sanscrit scholar, who reads off "Runic inscriptions" at a glance. He belongs to the same class as the learned geologist, Professor Brand, the scholarly Sir Thomas Murray and Mr. Philip Marsh, and the "Professor Scrobein," to whom with "Professor Graetz of Gottenburg," the mysteries of the Newport Round Tower were left for solution: according to an older narrative of the same class, of which an account has already been furnished to the readers of the *Canadian Journal*.*

This latest Runic discovery has also attracted the notice of English litterateurs; but in this case it has come into the hands of those whose habitual dealings are with more modern matters and dates than usually fall to the lot of "Archaic Anthropologists," and so the marvel has had a somewhat incredulous reception. "A piece of news reaches us," says the *Athenæum* of 13th February, "through the *Missouri Republican* which, if it should prove to be true, is of the highest historical interest. But is it true?" A brief abstract is then given of the above discovery, divested of some of its most astounding wonders; and to this is added the remark: "If this report is not a joke of the 'Western Boys,' it brings us the most important evidence yet produced of the existence in ancient days of a civilized race, in the great valley of the new world. The fact of the tunnel occurring just at St. Louis is suspicious. If the facts are truly stated, an ancient city must have stood on the Mississippi, near to St. Louis, though probably on the opposite bank. If so, the cases of Memphis and Cairo will have found a parallel in the New World."

* Vide "Historical Footprints in America," *Canadian Journal*, Sept., 1864.

So far the report appears to be the work of a correspondent. The editor adds, in *propria persona*, "We wait for further detail; but we fear the 'discovery' is all a joke." He was favoured, we may presume, with no more than this diluted modicum of the original narrative, concocted to suit his weak digestive organs. Even this is pretty strongly seasoned. But had he read the learned Sanscrit scholar, Professor Bacchio's, reports about the runes and sculptures, all doubts as to its possessing "the highest historical interest" would have vanished. For example, "one of the magnificent groups he is certain is intended to represent Ahasuerus crowning Queen Elizabeth; and another group of colossal figures, representing captives following the car of a victorious conqueror, are portraits of Luke Deuteronomy and the friend going into captivity."*

As matters for serious credit, or contributions "to the history of the migrations of races," such ingenious canards of the American press had better be left to the dwellers around the great mounds of the far west, where a vague wonder is begotten by the earthworks of a forgotten past; and the unsophisticated backwoodsman thinks nothing too wonderful to account for their origin. But this restless craving for some solution of the mystery of a vast continent, revealing everywhere monuments of extinct races, but without a history older than the sixteenth century,—however illogical and uncritical in its manifestations, —is not to be confounded with the credulity of stolid ignorance. The gold plates of the Mormon Gospel were, indeed, exhumed in the same apochryphal fashion; but its believers are recruited, to a large extent, from the Old World. After all it is better to have undue faith than intolerant scepticism, as the ally of credulity, whether it be among simple handicraftsmen and tillers of the soil, or with those who assume to dictate new creeds alike in science and religion.

* As this paper is passing through the press, a letter of Mr. E. G. Squier, dated from New York, appears in the *Athenæum* of March 20th, in reference to the "monstrously absurd stories about archæological discoveries, chiefly in our Western States." Of the special discovery in question, he says, "substantially the same story had been previously published, with the difference that instead of a tunnel, vast vaults, wonderful in monuments 'of Aasyrian type,' had been discovered hewn in the stony depths of Rock Island. I have before me a long letter from a Vienna *Savant*, earnestly inquiring into the particulars of the discovery of 'immense subterranean' in the cliffs of the Pallisades, on the Hudson river, just above this city: and expressing surprise that American Archæologists have not given a better account of them. ..... I could enumerate numbers of these hoaxes relating to Mexico and Central America, including those of the 'Chevalier Pontelli,' in Guatamala, of which the illustrations astonished the readers of the picture papers of France, England and Germany; and also those relating to the extraordinary Greek MSS., found at Oaxacingo (Hoax-by-Jingo!) in South Mexico."

It is by no means to be ascribed to the rude ignorance of our New World settlers that such marvels reappear from time to time. It is, on the contrary, because curiosity is already awakened, and education is pervading the masses of the people, that a reason is asked for the traces of extinct precursors alike of the European and the Red Indian, on the prairies and in the great river-valleys of the west. Knowledge is no longer confined to an exclusive cast. It is, indeed, very superficial as yet; and no doubt the shallow drafts do at times intoxicate the brain. But it is widely difused. The wonder which belongs to the stage of intelligent childhood, is accompanied by its large, uncritical faith. One among its curious phases, is the eagerness for grand telescopes, and the discovery of new asteroids, comets, and other celestial wonders. An astronomical observatory is one of the first demands of a Western University, and funds are forthcoming without difficulty for purchasing the requisite instruments; not, indeed, to be employed in such work as absorbs the patient labours of many an observatory staff in the Old World: accumulating data, the full results of which are to reward future generations; but to bring "the wonders of the heavens" within reach of the people. If the institution is to prosper, it is bound to discover a comet or two per annum; anticipate European observatories in the finding of the last asteroid; or, at the least, beat them all in the number of its solar spots, or November meteors. For ordinary work its course is equally well defined. The nebulæ, double stars, mensurations dealing with the vague immensities of space, the supposed central sun of the visible universe, and the like themes of fanciful speculation, have a marvellous fascination for the popular mind, just awaking to the charms of knowing,—and not yet conscious of how little it knows. And so it is with this dream of antique races, and an extinct civilization coeval with the Pharaohs, or Solomon, the Norse Thorfinn, the Welsh Madoc, or any other impersonation that seems like a tangible reality of the past.

But, after all, perhaps the most interesting aspect in which the view this persistent tendency to counterfeit antiques, and palm off on the American of the nineteenth century, Punic, Hebrew, Runic, and primeval inscriptions of all sorts, is its manifest reproduction among the young communities of the New World of that very same phase of uncritical but zealous devotion to archaic research, which, a century ago in the Mother Country, heralded the development of sound historical and literary criticism, with all the valuable fruits which have resulted from it.

CANADIAN LOCAL HISTORY.

[The following "Collections and Recollections" were not designed for the pages of the *Canadian Journal;* but a desire having been expressed in several quarters that they should appear there, ("reserving all rights," as the English publishing phrase is, we insert them); still fearing that the matters which form their staple will be deemed scarcely worthy of so notable a record. Their perusal, however, may have the effect of suggesting to some of our readers the propriety—the prudence, even—of entrusting to the care of the Editing Committee documents more valuable, that may be in their possession, and narratives of more force, of which they are the depositories, illustrative of the early history of the country, displaying traits in the character of individual worthies, or affording glimpses of society in different localities, while yet our settlements were in their infancy. In that case we shall not regret the publication in these pages of our own trivial notes and reminiscences, as it may lead to the setting apart, permanently, of a few pages in each number of the *Journal* for the reception and preservation of much peculiar matter which, to the historical investigator hereafter, will be of interest, and occasionally of importance.—ED. CAN. JOUR.]

TORONTO OF OLD:

A SERIES OF COLLECTIONS AND RECOLLECTIONS.

BY THE REV. DR. SCADDING.

I.—PALACE STREET TO THE MARKET-PLACE

In Rome, at the present day, the parts that are the most attractive to the tourist of archæological tastes, are those that are the most desolate; those that, apart from their associations, are the most uninviting. It is the same with many another venerable town of the world beyond the Atlantic, of far less note than the old Imperial capital; with Avignon, for example, with Nismes, and Vienne, in France; with Paris itself, also, to some extent; with Chester, and York, and St. Albans, the Verulam of the Roman period, in England. It is the same with our American towns, wherever any relics of their brief past are extant. Detroit, we remember, had once a quaint, dilapidated, primæval quarter. It is the same with our own Toronto. He that would examine the vestiges of the original settlement, out of which the actual town has grown, must betake himself in the first instance, to localities deserted now by the footsteps of fashion, and be content to contemplate objects that, to the indifferent eye, will seem commonplace and insignificant. To invest such places and things with any degree of interest will appear difficult. An attempt in that direction may even be pronounced visionary. Nevertheless it is a duty which we owe to our forefathers to take what note we can of the labours of their hands; to forbid, so far as we may, the utter oblivion of their early efforts, and deeds, and sayings, the outcome of their ideas, of their humours and anxieties; to forbid even, so far as we may, the utter oblivion of the form and fashion of their persons. The excavations which they made in the construction of their dwellings, and in their engineering operations, civil and military, were neither deep nor extensive; the materials which they employed were, for the most part, soft and perishable. In a few years all the original edifices of York, the infant Toronto, together with all the primitive delvings and cuttings, will, of necessity, have vanished. Natural decay

will have destroyed some. Winds, fires and floods will have removed others. The rest will be deliberately taken out of the way, or obliterated in the execution of modern improvements, the obsolete and fragile giving way before the commodious and more enduring. At St. Petersburg, we believe, the original log-hut of Peter the Great is preserved to the present day in a casing of stone, with a kind of religious reverence. And in Rome of old, through the influence of a similar sacred regard for the past, the lowly cottage of Romulus was long protected in a similar manner. There are probably no material relics of our founders and forefathers which we should care to invest with a like forced and artificial permanence. But the memory of those relics, and of such associations as may here and there be found to cluster around them, we may think it worth our while to collect and cherish.

Overlooking the harbour, far down in the east, there stands, at the present day, a large structure of gray cut-stone. Its radiating wings, the turret placed at a central point aloft, evidently for the ready oversight of the surrounding premises; the unornamented blank walls, pierced high up in each storey with a row of circular-headed openings, suggestive of shadowy corridors and cells within, all help to give to this pile an unmistakeable prison-aspect.

It was very nearly on the site of this rather hard-featured building that the first Houses of Parliament of Upper Canada were placed—humble but commodious structures of wood, built before the close of the eighteenth century, and destroyed by the incendiary torch of the invader in 1813. "They consisted," as a public letter addressed by the Rev. Dr. Strachan to ex-President Jefferson sets forth, "of two elegant Halls, with convenient offices, for the accommodation of the Legislature and of the Courts of Justice."—"The library and all the papers and records belonging to these institutions were consumed"—the same document continues—"and, at the same time, the Church was robbed, and the Town Library totally pillaged."—The injuries thus inflicted were a few months afterwards avenged by the destruction of the Public Buildings at Washington, by a British force. "We consider"—says an Address of the Legislative Council of Lower Canada to Sir George Provost in 1815—"we consider the destruction of the Public Buildings at Washington as a just retribution for the outrages committed by an American force at the Seat of Government of Upper Canada."

On the same site, succeeded the more conspicuous and more capacious, but still plain and simply cubical brick block erected for Legislative purposes in 1818, and accidentally burned in 1824. The conflagration on this occasion entailed a loss of £2,000, which the *Canadian Review* of the period, published at Montreal, observes, "in the present state of the finances and debt of the Province, cannot be considered as a trifling affair." The buildings were not ensured. Because they were isolated, and their external walls of incombustible material, it was imagined that the risk from fire was small, overlooking the numerous chances of ignition from within.

It was manifestly expected that hereabout was to be the Westminster of the new capital. It is not improbable that the position at the head, rather than at the entrance of the harbour, was considered eligible as being at once commanding and secure. The appearance of the spot in its primæval condition was doubtless more prepossessing than we can now conceive it ever to have been. Fine groves of forest trees may have given it a sheltered look, and, at the same time, have screened off from the view the adjoining swamps. The language of the early *Provincial Gazetteer*, published by authority, is as follows: "The Don empties itself into the harbour a little above the Town, running through a marsh, which, when drained, will afford most beautiful and fruitful meadows." In the early Plans, the same sanguine opinion is recorded, in regard to the morasses in this locality. On one, of 1810, now before us, we have the inscription: "Natural Meadow which may be mown." On another the legend runs "Large Marsh, and will in time make good Meadows." On a third it is "Large Marsh, and Good Grass."—At all events, hereabout it was that York, capital of Upper Canada, began to rise. To the west and north of the site of the Houses of Parliament, the officials of the Government, with merchants and tradesmen, in the usual variety, began to select lots and put up convenient dwellings; whilst close by, at Berkeley Street, or Parliament Street as the southern portion of Berkeley Street was then named, the chief thoroughfare of the Town had its commencing-point. Growing slowly westward from here, King Street developed in its course, in the customary American way, its hotel, its tavern, its boarding-house, its waggon factory, its tin-smith's shop, its bakery, its general stores, its lawyer's offices, its printing office, its places of worship.

Eastward of Berkeley Street, King Street became the Kingston Road, trending slightly to the north, and then proceeding in a straight line to a bridge over the Don. This divergency in the highway caused a number of the lots adjacent on the northern side to be awkwardly bounded at their southern ends by lines that formed, with the sides, alternately obtuse and acute angles, productive of corresponding inconveniences in the shape of buildings afterwards erected, and in the position of some of them, which appeared as if they had disagreed and separated at minute angles, or been jostled slightly out of place by an earthquake-shock.

At the Bridge, the lower Kingston Road, if produced westward in a right line, would have been Queen Street, or Lot Street, as that route would have been named, from the Park-lots projected at an early period on its northern side, had it been deemed proper to clear a passage in that direction through the forest. But some way westward on this line, a ravine was encountered lengthwise, which was held to present great engineering difficulties. A road cut diagonally from the Bridge to the opening of King Street at once avoided this natural impediment, and also led to a point where an easy connection was made with the track for wheels that ran along the shore of the harbour to the Garrison. But for the ravine referred to, which now appears to the south of Moss Park, Lot Street, or, which is the same thing, Queen Street, would at an early period have begun to dispute with King Street its claim to be the chief thoroughfare of York.

But to come back to our original unpromising stand-point. Objectionable as the first site of the Legislative Buildings at York may appear to ourselves, and alienated as it now is to lower uses, we cannot but gaze upon it with a certain degree of emotion when we remember that here it was that the first skirmishes took place in the great war of principles which afterwards with such determination and effect was fought out in Canada. Here it was that first loomed up before the minds of our early lawmakers the ecclesiastical question, the educational question, the constitutional question. Here it was that first was heard the open discussion, infantile, indeed, and vague, but pregnant with very weighty results, of topics, social and national, which, at the time, even in the parent state itself, were mastered but by few. Here it was, during a period of twenty-seven years (1797–1824), at each opening and closing of the annual session, amidst the firing of cannon and the commotion of a crowd, the cavalcade drew up that is wont, from the banks of the Thames to the remotest colony of England, to mark the solemn progress of the sovereign or the sovereign's representative, to and from the other Estates assembled in Parliament. Here, amidst such fitting surroundings of state, as the circumstances of the times and the place admitted, came and went personages of eminence, whose names are now familiar in Canadian story: never, indeed, the founder and organizer of Upper Canada, Governor Simcoe himself, in this formal and ceremonious manner; although often must he have visited the spot otherwise, in his personal examinations of every portion of his young capital and its environs. Here, immediately after him, came and went repeatedly, in due succession, President Russell, Governor Hunter, Governor Gore, General Brock, General Sheaffe, Sir Gordon Drummond, Sir Peregrine Maitland. And, while contemplating the scene of our earliest political conflicts; the scene of our earliest known state pageants in these parts, with their modest appliances and accommodations, our minds intuitively recur to a period farther removed still, when under more primitive conditions the Parliament of Upper Canada assembled at Newark, across the Lake. We picture to ourselves the group of seven crown-appointed Councillors and five representatives of the commons, assembled there, with the first Speaker, McDonell of Glengarry; all plain, unassuming, prosaic men, listening, at their first session, to the opening speech of their frank and honoured Governor. We see them adjourning to the open air from their straitened chamber at Navy Hill, and conducting the business of the young Province under the shade of a spreading tree, introducing the English Code and Trial by Jury, decreeing Roads, and prohibiting the spread of Slavery; while a boulder of the drift, lifting itself through the natural turf, serves as a desk for the recording clerk. Below them, in the magnificent estuary of the river Niagara, the waters of all the Upper Lakes are swirling by, not yet recovered from the agonies of the long gorge above, and the leap at Table Rock.—Even here, at the opening and close of this primæval Legislature, some of the decent ceremonial was observed with which, as we have seen, the sadly-inferior site of the west bank of the river Don became afterwards familiar. We learn this from the narrative of the French duke de Liancourt, who affords us

a glimpse of the scene at Newark on the occasion of a Parliament there in 1795. "The whole retinue of the Governor," he says, "consisted in a guard of fifty men of the garrison of the fort. Draped in silk, he entered the Hall with his hat on his head, attended by his adjutant and two secretaries. The two members of the Legislative Council gave, by their speaker, notice of it to the Assembly. Five members of the latter having appeared at the bar, the Governor delivered a speech, modelled after that of the King, on the political affairs of Europe, on the treaty concluded with the United States [the treaty of 1794], which he mentioned in expressions very favourable to the Union; and on the peculiar concerns of Canada" (Travels, i. 258). By the Quebec Act, passed in 1791, it was enacted that the Legislative Council for Upper Canada should consist of not fewer than seven members, and the Assembly of not less than sixteen members, who were to be called together at least once in every year. To account for the smallness of the attendance on the occasion just described, the duke explains that the Governor had deferred the session "on account of the expected arrival of a Chief Justice, who was to come from England; and from a hope that he should be able to acquaint the members with the particulars of the Treaty with the United States. But the harvest had now begun, which, in a higher degree than elsewhere, engages in Canada the public attention, far beyond what state affairs can do. Two members of the Legislative Council were present, instead of seven; no Chief Justice appeared, who was to act as Speaker; instead of sixteen members of the Assembly, five only attended; and this was the whole number that could be collected at this time. The law required a greater number of members for each house, to discuss and determine upon any business; but within two days a year would have expired since the last session. The Governor, therefore, thought it right to open the session, reserving, however, to either house the right of proroguing the sitting, from one day to another, in expectation that the ships from Detroit and Kingston would either bring the members who were yet wanting, or certain intelligence of their not being able to attend."

But again to return to the Houses of Parliament at York.—Extending from the Grounds which surrounded the Buildings, in the east, all the way to the fort at the entrance of the harbour, in the west, there was a succession of fine forest trees, especially oaks; underneath and by the side of which the upper surface of the precipitous but nowhere very elevated cliff was carpeted with thick green-sward, such as is still to be seen between the old and new Garrisons, or at Mississaga Point at Niagara. A fragment, happily preserved, of the ancient bank, is to be seen in the ornamental piece of ground known as the Fair-green; a strip of land first protected by a fence and planted with shrubbery at the instance of Mr. George Monro, when Mayor, who also, in front of his property some distance further on, long guarded from harm a solitary survivor of the primæval grove that once fringed the harbour.

On our first visit to Southampton, many years ago, we remember observing a resemblance between the walk to the river Itchen, shaded by trees and commanding a wide water-view on the south, and the margin of the harbour of York.

In the interval between the points where now Princes Street and Caroline Street descend to the water's edge, was a favorite landing-place for the small craft of the bay—a wide and clean gravelly beach, with a convenient ascent to the cliff above. Here on fine mornings, at the proper seasons, skiffs and canoes, log and birch-bark, were to be seen putting in, weighed heavily down with fish, speared or otherwise taken during the preceding night, in the lake, bay, or neighboring river. Occasionally a huge sturgeon would be landed, one struggle of which might suffice to upset a small boat. Here were to be purchased, in quantities, salmon, pickerell, masquelongue, whitefish and herrings; with the smaller fry of perch, bass and sunfish. Here, too, would be displayed unsightly catfish, suckers, lampreys, and other eels; and sometimes lizards, young alligators for size. Specimens, also, of the curious steel-clad, inflexible, vicious-looking pipé-fish were not uncommon. About the submerged timbers of the wharves this creature was often to be seen,—at one moment stationary and still, like the dragon-fly, or humming-bird poised on the wing, then, like those nervous denizens of the air, giving a sudden dart off to the right or left, without curving its body.

Across the bay, from this landing-place, a little to the eastward, was the narrowest part of the peninsula, a neck of sand destitute of trees, known as the portage or carrying-place, where canoes and small boats were quickly passed to and from the lake.

Along the bank, above the landing-place, Indian encampments were occasionally set up. Here, in comfortless wigwams, we have seen Dr. Lee, a medical man attached to the Indian department, administering from an ordinary tin cup nauseous but salutary draughts to sick and convalescent squaws. It was the duty of Dr. Lee to visit Indian settlements and prescribe for the sick. In the discharge of this duty he performed long journeys, on horseback, to Penetanguishene and other distant posts, carrying with him his drugs and apparatus in saddle-bags. When advanced in years, and somewhat disabled in regard to activity of movement, Dr. Lee was attached to the Parliamentary staff as Usher of the Black Rod.—The locality at which we are glancing suggests the name of another never-to-be-forgotten medical man, whose home and property were close at hand. This is the eminent surgeon and physician, Christopher Widmer. It is to be regretted that Dr. Widmer left behind him no written memorials of his long and varied experience. Before his settlement in York, he had been a staff cavalry surgeon, on active service during the campaigns in the Peninsula. A personal narrative of his public life would have been full of interest. But his ambition was content with the homage of his contemporaries, rich and poor, rendered with sincerity to his pre-eminent abilities and inextinguishable zeal as a surgeon and physician. Long after his retirement from general practice, he was every day to be seen passing to and from the old Hospital on King Street, conveyed in his well-known cabriolet, and guiding with his own hand the reins conducted in through the front window of the vehicle. He had now attained a great age; but his slender form continued erect; the hat was worn jauntily, as in other days, and the dress was ever scrupulously exact; the expression of the face in repose was somewhat abstracted and sad, but a quick smile appeared at the recognition of friends. The ordinary engravings of Harvey, the discoverer of the circulation of the blood, recall in some degree the countenance of Dr. Widmer. Within the General Hospital, a portait of him is appropriately preserved. One of the earliest, and at the same time one of the most graceful lady-equestrians ever seen in York was this gentleman's accomplished wife. At a later period a sister of Mr. Justice Willis was also conspicuous as a skilful and fearless horsewoman. The description in the Percy Anecdotes of the Princess Amelia, youngest daughter of George II., is curiously applicable to the last-named lady, who united to the amiable peculiarities indicated, talents and virtues of the highest order. "She," the brothers Sholto and Reuben say, "was of a masculine turn of mind, and evinced this strikingly enough in her dress and manners: she generally wore a riding-habit in the German fashion with a round hat; and delighted very much in attending her stables, particularly when any of the horses were out of order." At a phenomenon such as this, suddenly appearing in their midst, the staid and simple-minded society of York stood for a while aghast.

At the south-west corner of Princes Street, near where we are now supposing ourselves to be, was a building popularly known as Russell Abbey. It was the house of the Hon. Peter Russell, and. after his decease, of his maiden sister, Miss Elizabeth Russell, a lady of great refinement, who survived her brother many years. The edifice, like most of the early homes of York, was of one storey only; but it exhibited in its design a degree of elegance and some peculiarities. To a central building were attached wings with gables to the south: the windows had each an architectural decoration or pediment over it. It was this feature, we believe, that was supposed to give to the place something of a monastic air; to entitle it even to the name of "Abbey." In front, a dwarf stone wall with a light wooden paling surrounded a lawn, on which grew tall acacias or locusts. Mr. Russell was a scion of the Bedford Russells. He apparently desired to lay the foundation of a solid landed estate in Upper Canada. His position as Administrator, on the departure of the first Governor of the Province, gave him facilities for the selection and acquisition of wild lands. The duality necessarily assumed in the wording of the Patents by which the Administrator made grants to himself, seems to have been regarded by some as having a touch of the comic in it. Hence among the early people of these parts the name of Peter Russell was occasionally to be heard quoted good-humouredly, not malignantly, as an example of "the man who would do well unto himself."—On the death of Mr. Russell his property passed into the hands of his sister, who bequeathed the whole to Dr. William Warren Baldwin, into whose possession also came the valuable family plate, elaborately embossed with the armorial bearings of the Russells. Russell Hill, long the residence of Admiral Augustus Baldwin, had its name from Mr. Russell; and in one of the elder branches of the Baldwin family, Russell

is continued as a baptismal name. In the same family is also preserved an interesting portrait of Mr. Peter Russell himself, from which we can see that he was a gentleman of portly presence, of strongly marked features, of the Thomas Jefferson type.

Russell Abbey became afterwards the residence of Bishop Macdonell, a universally-respected Scottish Roman Catholic ecclesiastic, whose episcopal title was at first derived from Rhesina *in partibus*, but afterwards from our Canadian Kingston, where his home usually was. His civil duties, as a member of the Legislative Council of Upper Canada, required his presence in York during the Parliamentary sessions.—It used to be supposed by some that the occupancy of Russell Abbey by the Bishop caused the portion of Front Street which lies eastward of the Market-Place to be denominated Palace Street. But the name appears in plans of York of a date many years anterior to that occupancy. In connection with this mention of Bishop McDonell, it may be of some interest to add that, in 1826, Thomas Weld, of Lulworth Castle, Dorsetshire, was consecrated as his coadjutor, in England, under the title of Bishop of Amylæ. But it does not appear that he ever came out to Canada. (This was afterwards the well-known English Cardinal. He had been a layman, and married, up to the year 1825; when, on the death of his wife, he took orders; and in one year he was, as just stated, a Bishop.) Russell Abbey may indeed have been styled the "Palace"; but it was probably from being the residence of one who for three years administered the Government; or the name "Palace Street" itself may have suggested the appellation. "Palace Street" was no doubt intended to indicate the fact that it led directly to the Government reservation at the end of the Town on which the Parliament Houses were erected, and where it was supposed the "Palais du Gouvernement," the official residence of the representative of the sovereign in the Province, would eventually be. On an Official Plan of this region, of the year 1810, the Parliament Buildings themselves are styled "Government House."

At the laying-out of York, however, we find, from the plans, that the name given in the first instance to the Front street of the town was, not Palace Street, but King Street. Modern King Street was then Duke Street, and modern Duke Street, Duchess Street. These street names were intended as loyal compliments to members of the reigning family; to George the Third; to his son the popular Duke of York, from whom, as we shall learn hereafter, the town itself was named; to the Duchess of York, the eldest daughter of the King of Prussia. In the cross streets the same chivalrous devotion to the Hanoverian dynasty was exhibited. George Street, the boundary westward of the first nucleus of York, bore the name of the heir-apparent, George, Prince of Wales. The next street eastward was honoured with the name of his next brother, Frederic, the Duke of York himself. And the succeeding street eastward, Caroline Street, had imposed upon it that of the Princess of Wales, afterwards so unhappily famous as George the Fourth's Queen Caroline. Whilst in Princes Street (for such is the correct orthography, as the old plans shew, and not Princess Street, as is generally seen now,) the rest of the male members of the royal family were collectively commemorated, namely, the Duke of Clarence, the Duke of Kent, the Duke of Cumberland, the Duke of Sussex, and the Duke of Cambridge.

When the Canadian town of York was first projected, the marriage of the Duke of York with the daughter of the King of Prussia, Frederica Charlotta Ulrica, had only recently been celebrated at Berlin. It was considered at the time an event of importance, and the ceremonies on the occasion are given with some minuteness in the Annual Register for 1791. We are there informed that "the supper was served at six tables; that the first was placed under a canopy of crimson velvet, and the victuals [as the record terms them] served on gold dishes and plates; that Lieutenant-General Bornstedt and Count Bruhl had the honour to carve, without being seated; that the other five tables, at which sat the generals, ministers, ambassadors, all the officers of the court, and the high nobility, were served in other apartments; that supper being over, the whole assembly repaired to the White Hall, where the trumpet, timbrel, and other music, were playing; that the flambeau-dance was then began, at which the ministers of state carried the torches; that the new couple were attended to their apartment by the reigning Queen and the Queen dowager; that the Duke of York wore on this day the English uniform, and the Princess Frederica a suit of *drap d'argent*, ornamented with diamonds." In Ashburton's "New and Complete History of England, from the first settlement of Brutus, upwards of

one thousand years before Julius Cæsar, to the year 1793," now lying before us, two full-length portraits of the Duke and Duchess are given.—New York and Albany, in the adjoining State, had their names from titles of a Duke of York in 1664, afterwards James II. His brother Charles II., made him a present, by Letters Patent, of all the territory, from the western side of the Connecticut river to the east side of Delaware bay; that is, of the present States of Connecticut, New-York, Delaware and New-Jersey.

On the green-sward of the bank between Princes Street and George Street, the annual military "Trainings" on the Fourth of June, "the old King's birthday," were wont to take place. At a later period the day of meeting was the 23rd of April, St. George's Day, the fête of George IV. Military displays on a grand scale in and about Toronto have not been uncommon in modern times, exciting the enthusiasm of the multitude that usually assembles on such occasions. But, in no way inferior in point of interest to the unsophisticated youthful eye, half a century ago unaccustomed to anything more elaborate, were these motley musterings of the militia companies. The costume of the men may have been various, the fire-arms only partially distributed and those that were to be had not of the brightest hue, nor of the most scientific make; the lines may not always have been perfectly straight, nor their constituents well matched in height; the obedience to the word of command may not have been rendered with the mechanical precision which we admire at reviews now, nor with that total suppression of dialogue in undertone in the ranks, nor with that absence of remark interchanged between the men and their officers, that are customary now. Nevertheless, as a military spectacle, these gatherings and manœuvres on the grassy bank here, were effective: they were always anticipated with pleasure and contemplated with satisfaction. The officers on these occasions—some of them mounted—were arrayed in uniforms of antique cut; in red coats with wide black breast lappets and broad tail flaps; high collars, tight sleeves and large cuffs; on the head a black hat, the ordinary high-crowned civilian hat, with a cylindrical feather some eighteen inches high inserted at the top, not in front, but on one side (whalebone surrounded with feathers from the barnyard, scarlet at base, white above). Animation was added to the scene by a drum and a few fifes executing with liveliness "The York Quickstep," "The Reconciliation," and "The British Grenadiers." And then, in addition to the local cavalry corps, there were the clattering scabbards, the blue jackets, and bear-skin helmets of Captain Button's dragoons from Markham and Whitchurch.

In the rank and file at these musterings—as well as numerously among the officers, commissioned and non-commissioned—were to be seen men who had quite recently jeopardized their lives in the defence of the country. At the period we are speaking of, only some six or seven years had elapsed since an invasion of Canada from the south. "The late war" for a long while, very naturally, formed a fixed point in local chronology, from which times and seasons were calculated; a fixed point, however, which, to the indifferent new-comer, and even to those who, when "the late war" was in progress, were not in bodily existence, seemed already a thing of a remote past. An impression of the miseries of war, derived from the talk of those who had actually felt them, was very strong in the minds of the rising generation; an impression accompanied also at the same time with the uncomfortable conviction, derived from the same source, that another conflict was inevitable in due time. The musterings on "Training-day" were thus invested with interest and importance in the minds of those who were summoned to appear on these occasions, as also in the minds of the boyish looker-on, who was aware that ere long he would himself be required by law to turn out and take his part in the annual militia evolutions, and perhaps afterwards, possibly at no distant hour, to handle the musket or wield the sword in earnest.

A little further on, in a house at the north west corner of Frederick Street, a building afterwards utterly destroyed by fire, was born, in 1804, the Hon. Robert Baldwin, son of Dr. William Warren Baldwin, already referred to, and Attorney-General in 1842 for Upper Canada. In the same building, at a later period, (and previously in an humble edifice at the north-west corner of King Street and Caroline Street, now likewise wholly destroyed,) the foundation was laid, by well-directed and far-sighted ventures in commerce, of the great wealth (locally proverbial) of the Cawthra family, the Astors of Upper Canada. It was also in the same house, prior to its occupation by Mr. Cawthra, senior, that the printing operations of Mr. William Lyon McKenzie were carried on at the time of the destruction of his press by a party of young men, who con-

sidered it proper to take some spirited notice of the criticisms on the public acts of their fathers, uncles and superiors generally, that appeared every week in the columns of the *Colonial Advocate;* a violent act memorable in the annals of Western Canada, not simply as having been the means of establishing the fortunes of an indefatigable and powerful Journalist, but more notably as presenting an unconscious illustration of a general law, observable in the early development of communities, whereby an element destined to elevate and regenerate is, on its first introduction, resisted, and sought to be crushed physically, not morally; somewhat as the white man's watch was dashed to pieces by the Indian, as though it had been a sentient thing, conspiring in some mysterious way with other things, to promote the ascendancy of the stranger. The youthful perpetrators of the violence referred to were not long in learning practically the futility of such exploits. Good old Mr. James Baby, on handing to his son Raymond the amount which that youth was required to pay as his share of the heavy damages awarded, as a matter of course, by the jury on the occasion, is said to have added:—"There! go and make one great fool of yourself again!"—a sarcastic piece of advice that might have been offered to each of the parties concerned.—A few steps northward, on the east side of Frederick Street, was the first Post Office, on the premises of Mr. Allan, who was postmaster; and southward, where this street touches the water, was the Merchants' Wharf, also the property of Mr. Allan; and the Custom House, where Mr. Allan was the Collector. In an early, limited condition of society, a man of more than the ordinary aptitude for affairs is required to act in many capacities. The Merchants' Wharf was the earliest landing-place for the larger craft of the lake. At a later period other wharves or long wooden jetties, extending out into deep water, one of them named the Farmers' Wharf, were built westward. In the shoal water between the several wharves, for a long period, there was annually a dense crop of rushes or flags. The Town or County authorities incurred considerable expense, year after year, in endeavouring to eradicate them—but, like the heads of the hydra, they were always re-appearing. In July, 1821, a "Mr. Coles' account for his assistants' labour in destroying rushes in front of the Market Square" was laid before the County magistrates, and audited, amounting to £13 6s. 3*d*. In August of the same year, the minutes of the County Court record that "Capt. Macaulay, Royal Engineers, offered to cut down the rushes in front of the Town between the Merchants' Wharf and Coopers' Wharf, for a sum not to exceed ninety dollars, which would merely be the expense of the men and materials in executing the undertaking: his own time he would give to the public on this occasion, as encouragement to others to endeavour to destroy the rushes when they become a nuisance:" it was accordingly ordered "that ninety dollars be paid to Capt. Macaulay or his order, for the purpose of cutting down the rushes, according to his verbal undertaking to cut down the same, to be paid out of the Police or District funds in the hands of the Treasurer of the District." We have understood that Capt. Macaulay's measures for the extinction of the rank vegetation in the shallow waters of the harbour, proved to be very efficient. The instrument used was a kind of screw grapnel, which, let down from the side of a large scow, laid hold of the rushes at their root and forcibly wrenched them out of the bed of mud below. The entire plant was thus lifted up, and drawn by a windlass into the scow. When a full load of the aquatic weed was collected, it was taken out into the open water of the Lake, and there disposed of.

Passing on our way, we soon came to the Market Square. This was a large open space, with wooden shambles in the middle of it, thirty-six feet long and twenty-four wide, running north and south. In 1824, the square was, by the direction of the County magistrates, closed in on the east, west, and south sides, "with a picketting and oak ribbon, the pickets at ten feet distance from each other, with three openings or foot-paths on each side." The digging of a public well here, in the direction of King Street, was an event of considerable interest in the town. Groups of school-boys every day scanned narrowly the progress of the undertaking: a cap of one or the other of them, mischievously precipitated to the depths where the labourers' mattocks were to be heard pecking at the shale below, may have impressed the execution of this public work all the more indelibly on the recollection of some of them. By referring to a volume of the *Upper Canada Gazette* we find that this was in 1823. An unofficial advertisement in that periodical, dated June the 9th, 1823, calls for proposals to be sent in to the office of the Clerk of the Peace, "for the sinking a well, stoning and sinking a pump therein, in the most approved manner, at the Market Square of the said town [of York], for the convenience of the

Public." It is added that persons desirous of contracting for the same, must give in their proposals on or before Tuesday, the first day of July next ensuing; and the signature, "by the order of the Court," is that of "S. Heward, Clerk of the Peace, H. D." [Home District.] The tender of John Hutchison and George Hetherington was accepted. They offered to do the work "for the sum of £25 currency on coming to the rock, with the addition of seven shillings and sixpence per foot for boring into the rock until a sufficient supply of water can be got, should it be required." The work was done and the account paid July 30th, 1823. The charge for boring eight feet two inches through the rock was £3 1*s.* 3*d.* The whole well and pump thus cost the County the modest sum of only £28 1*s.* 3*d.* The charge for flagging round the pump, for "logs, stone and workmanship," was £5 2*s.* 4½*d.*, paid to Mr. Hugh Carfrae, pathmaster. Near the public Pump, auctions in the open air occasionally took place. A humourous chapman in that line, Mr. Patrick McGann, used often here to be seen and heard, disposing of his miscellaneous wares. And here we once witnessed the horrible exhibition of a public whipping, in the case of two culprits whose offence is forgotten. A discharged regimental drummer, a native African, administered the lash. The sheriff stood by, keeping count of the stripes. The senior of the two unfortunates bore his punishment with stoicism, encouraging the negro to strike with more force. The other, a young man, endeavoured for a little while to imitate his companion in this respect; but soon was obliged to evince by fearful cries the torture endured. Similar scenes were elsewhere to be witnessed in Canada. In the *Montreal Herald* of September 16th, 1815, we have the following item of city news, given without comment: "Yesterday, between the hours of 9 and 10, pursuant to their sentences, André Latulippe, Henry Leopard, and John Quin, received 39 lashes each, in the New Market Place."

In the Market Square at York, the pillory and the stocks were also from time to time set up. The latter were seen in use for the last time in 1834. In 1804, a certain Elizabeth Ellis was, for "being a nuisance," sentenced by Judge Alcock to be imprisoned for six months, and "to stand in the pillory twice during the said imprisonment, on two different market days, opposite the Market House in the town of York, for the space of two hours each time." In the same year, the same sentence was passed on one Campbell, for using "seditious words." In 1831 the wooden shambles were removed, and replaced in 1833 by a collegiate-looking building of red brick, quadrangular in its arrangement, with arched gateway-entrances on King Street and Front Street. This edifice filled the whole square, with the exception of roadways on the east and west sides. The public well was now concealed from view. It doubtless exists still, to be discovered and gloated over by the antiquarian of another century. Round the four sides of the new brick Market ran a wooden gallery, which served to shade the butchers' stalls below. It was here that a fearful casualty occurred in 1834. A concourse of people were being addressed after the adjournment of a meeting on an electional question, when a portion of the overcrowded gallery fell, and several persons were caught on the sharp iron hooks of the stalls underneath, and so received fatal injuries. The damage done to the northern end of the quadrangle during the great fire in 1849 led to the demolition of the whole, and the erection of St. Lawrence Hall and Market. Over windows on the second storey at the south-east corner of the red brick structure now removed, there appeared, for several years, two signs, united at the angle of the building, each indicating by its inscription the place of "The Huron and Ontario Railway" office. This was while the Northern Railway of Canada was yet existing simply as a project. In connection with our notice of the Market, we subjoin the prices agreed upon by the magistrates, in Quarter Sessions assembled, as in their opinion fair and equitable to be paid by the military authorities for provisions, during the war in 1814:—Flour, per barrel, £3 10*s.* Wheat, per bushel, 10*s.* Pease, per bushel, 7*s.* 6d. Barley and Rye, the same. Oats, per bushel, 5*s.* Hay, per ton, £5. Straw, £3. Beef, on foot, per cwt., £2 5*s*; slaughtered, per lb., 7½*d.* Pork, salted, per barrel, £7 10*s.*; per carcass, 7½*d.* Mutton, per lb., 9*d.* Veal, 8*d.* Butter, 1*s.* 3*d.* Bread, per loaf of 4 lbs., 1*s.* 6*d.* In April, 1822, peace then reigning, York prices were:—Beef, per lb., 2*d. a* 4*d.* Mutton, 4*d. a* 5*d.* Veal, 4*d. a* 5*d.* Pork, 2*d. a* 2½*d.* Fowls, per pair, 1*s.* 3*d.* Turkeys, each, 3*s.* 9*d.* Geese, 2*s.* 6*d.* Ducks, per pair, 1*s.* 10*d.* Cheese, per lb., 5*d.* Butter, 7½*d.* Eggs, per doz., 5*d.* Wheat, per bushel, 2*s.* 6*d.* Barley, 48 lbs., 2*s.* Oats, 1*s.* Pease 1*s.* 1½*d.* Potatoes, per bushel, 1*s.* 3*d.* Turnips, 1*s.* Cabbages, per head, 2*d.* Flour, per cwt., 6*s.* 3*d.* Flour, per barrel, 12*s.* 6*d.* Tallow, per lb., 5*d.* Lard, per lb., 5*d.* Hay, per ton, £2 10*s.* Pork, per barrel, £2 10*s.* Wood, per cord, 10*s.*

II.—FRONT STREET, FROM THE MARKET-PLACE TO BROCK STREET.

The corner which we approach after passing the Market-square, was occupied by an inn with a sign-board sustained on a high post inserted at the outer edge of the foot-path, in country roadside fashion. This was Hamilton's, or the White Swan. It was here, we believe, or in an adjoining house, that a travelling citizen of the United States, in possession of a collection of stuffed birds and similar objects, endeavoured at an early period to establish a kind of Natural History Museum. Just beyond was the Steamboat Hotel, remarkable for the spirited delineation of a steam-packet of vast dimensions, extending the whole length of the building, just over the upper verandah of the hotel. A little further on was the Ontario House, a hotel built in a style common then at the Falls of Niagara and in the United States. A row of lofty pillars, well-grown pines in fact, stripped and smoothly planed, reached from the ground to the eaves, and supported two tiers of galleries, which, running behind the columns, did not interrupt their vertical lines. Close by the Ontario House, Market Street from the west entered Front Street at an acute angle. In the gore between the two streets, a building sprang up, which, in conforming to its site, assumed the shape of a coffin. The foot of this ominous structure was the office where travellers booked themselves for various parts in the stages that from time to time started from York. It took four days to reach Niagara in 1816. We are informed by a contemporary advertisement now before us, that "on the 20th of September next [1816], a stage will commence running between York and Niagara: it will leave York every Monday, and arrive at Niagara on Thursdays; and leave Queenston every Friday. The baggage is to be considered at the risk of the owner, and the fare to be paid in advance." In 1824, the mails were conveyed the same distance, *via* Ancaster, in three days. In a post-office advertisement for tenders, signed "William Allan, P.M.," we have the statement: "The mails are made up here [York] on the afternoon of Monday and Thursday, and must be delivered at Niagara on the Wednesday and Saturday following; and within the same period in returning." In 1835, Mr. William Weller was the proprietor of a line of stages between Toronto and Hamilton, known as the "Telegraph Line." In an advertisement before us, he engages to take passengers "through by daylight, on the Lake Road, during the winter season." Communication with England was at this period a tedious process. So late as 1836, Mrs. Jameson thus writes in her Journal at Toronto (i. 182): "It is now seven weeks since the date of the last letters from my dear far-distant home. The Archdeacon," she adds, "told me, by way of comfort, that when he came to settle in this country, there was only one mail-post from England in the course of a whole year, and it was called, as if in mockery, the Express." To this "Express" we have a reference in a post-office advertisement to be seen in a *Quebec Gazette* of 1792: "A mail for the Upper Countries, comprehending Niagara and Detroit, will be closed," it says, "at this office, on Monday, the 30th inst., at 4 o'clock in the evening, to be forwarded from Montreal by the annual winter Express, on Thursday, the 3rd of Feb. next." From the same paper we learn that on the 10th of November, the latest date from Philadelphia and New-York was Oct. 8th: also, that a weekly conveyance had lately been established between Montreal and Burlington, Vermont. Compare all this with advertisements in Toronto daily papers now, from agencies in the town, of "Through Lines" weekly, to California, Vancouvers', China and Japan, connecting with Lines to Australia and New Zealand.

On the beach below the Steamboat Hotel was, at a late period, a market for the sale of fish. It was from this spot that Bartlett, in his "Canadian Scenery," made one of the sketches intended to convey to the English eye an impression of the town. In the foreground are groups of conventional, and altogether too picturesque, fishwives and squaws: in the distance is the junction of Hospital Street and Front Street, with the tapering building between. On the right are the galleries of what had been the Steamboat Hotel: it here bears another name. Bartlett's second sketch is from the end of a long wharf or jetty to the west. The large building in front, with a covered passage through it for vehicles, is the warehouse or freight depôt of Mr. William Cooper, long the owner of this favourite landing-place. Westwards, the pillared front of the Ontario House is to be seen. Both of these views already look quaint, and possess a value as preserving a shadow of much that no longer exists.

Where Mr. Cooper's wharf joined the shore there was a ship-building yard. We have a recollection of a launch that strangely took place here on a Sunday. An attempt to get the ship into

the water on the preceding day had failed. Delay would have occasioned an awkward settling of the ponderous mass. We shall have occasion hereafter to speak of the early shipping of the harbour. The lot extending northward from the Ontario House corner to King Street was the property of Attorney-General Macdonnell, who, while in attendance on General Brock as Provincial aide-de-camp, was slain in the engagement on Queenston Heights. His death created the vacancy to which, at an unusually early age, succeeded Mr. John Beverley Robinson, afterwards the distinguished Chief Justice of Upper Canada. Mr. Macdonnell's remains are deposited with those of his military chief under the column on Queenston Heights. He bequeathed the property to which our attention has been directed, to a youthful nephew, on certain conditions, one of which was that he should be educated in the tenets of the Anglican Church, notwithstanding the Roman Catholic persuasion of the rest of the family.

The track for wheels that here descended to the water's edge from the north, Church Street subsequently, was long considered a road remote from the business part of the town, like the road southward of Charing-cross, as shewn in Aggas's early map of London. A row of frame buildings on its eastern side, in the direction of King Street, perched high on cedar posts over excavations generally filled with water, remained in an unfinished state until the whole began to be out of the perpendicular and to become gray with the action of the weather. It was evidently a premature undertaking; the folly of an over-sanguine speculator. Yonge Street beyond, where it approached the shore of the harbour, was unfrequented. In spring and autumn it was a notorious slough. In 1830, a small sum would have purchased any of the building lots on either side, between Front Street and Market Street.

Between Church Street and Yonge Street, now, we pass a short street uniting Front Street with Wellington Street. Like Salisbury, Cecil, Craven, and other short but famous streets off the Strand, it retains the name of the distinguished person whose property it traversed in the first instance. It is called Scott Street, from Chief Justice Thomas Scott, whose residence and grounds were here. Mr. Scott was one of the venerable group of early personages of whom we shall have occasion to speak. He was a man of fine culture, and is spoken of affectionately by those who knew him. His stature was below the average. A heavy, overhanging forehead intensified the very thoughtful expression of his countenance, which belonged to the class suggested by the current portraits of the United States' jurist, Kent. We sometimes, to this day, fall in with books from his library, bearing his familiar autograph. Mr. Scott was the first chairman and president of the "Loyal and Patriotic Society of Upper Canada," organized at York in 1812. His name consequently appears often in the Report of that Association, printed by William Gray in Montreal in 1817. The objects of the Society were "to afford relief and aid to disabled militiamen and their families; to reward merit, excite emulation, and commemorate glorious exploits, by bestowing medals and other honorary marks of public approbation and distinction for extraordinary instances of personal courage and fidelity in defence of the Province." The preface to the Report mentions that "the sister-colony of Nova Scotia, excited by the barbarous conflagration of the town of Newark and the devastation on that frontier, had, by a Legislative act, contributed largely to the relief of this Province." In an appeal to the British public, signed by Chief Justice Scott, it is stated that "the subscription of the town of York amounted in a few days to eight hundred and seventy-five pounds five shillings, Provincial currency, dollars at five shillings each, to be paid annually during the war; and that at Kingston to upwards of four hundred pounds."

Scott Street conducts to the site, on the north side of Hospital Street, westward, of the home of Mr. James Baby, and eastward, to that of Mr. Peter Macdougall, two notable citizens of York.

A notice of Mr. Baby occurs in Sibbald's *Canadian Magazine* for March, 1833. The following is an extract: "James Baby was born at Detroit in 1762. His family was one of the most ancient in the colony; and it was noble. His father had removed from Lower Canada to the neighbourhood of Detroit before the conquest of Quebec, where, in addition to the cultivation of lands, he was connected with the fur-trade, at that time, and for many years after, the great staple of the country. James was educated at the Roman Catholic Seminary at Quebec, and returned to the paternal roof soon after the peace of 1783. The family had ever been distinguished (and indeed all the higher French families) for their adherence to the British crown;

and to this, more than to any other cause, are we to attribute the conduct of the Province of Quebec during the American War. Being a great favourite with his father, James was permitted to make an excursion to Europe, before engaging steadily in business; and after spending some time, especially in England, rejoined his family. * * * There was a primitive simplicity in Mr. Baby's character, which, added to his polished manners and benignity of disposition, threw a moral beauty around him which is very seldom beheld:" In the history of the Indian chief Pontiac, who, in 1763, aimed at extirpating the English, the name of Mr. Baby's father repeatedly occurs. The Canadian *habitans* of the neighbourhood of Detroit, being of French origin, were unmolested by the Indians; but a rumour had reached the great Ottawa chief, while the memorable siege of Detroit was in progress, that the Canadians had accepted a bribe from the English to induce them to attack the Indians. "Pontiac," we read in Parkman's History, p. 227, "had been an old friend of Baby; and one evening, at an early period of the siege, he entered his house, and, seating himself by the fire, looked for some time steadily at the embers. At length, raising his head, he said he had heard that the English had offered the Canadian a bushel of silver for the scalp of his friend. Baby declared that the story was false, and protested that he would never betray him. Pontiac for a moment keenly studied his features. 'My brother has spoken the truth,' he said, 'and I will shew that I believe him.' He remained in the house through the evening, and, at its close, wrapped himself in his blanket and lay down upon a bench, where he slept in full confidence till morning."

Mr. Macdougall was a gentleman of Scottish descent, but, like his compatriots in the neighborhood of Murray Bay, so thoroughly Lower-Canadianised as to be imperfectly acquainted with the English language to the last. He was a successful merchant of the town of York, and filled a place in the old local conversational talk, in which he was sometimes spoken of as "Wholesale, Retail, Pete MacDoug,"—an expression employed by himself on some occasion. He is said once to have been much perplexed by the item "ditto" occurring in a bill of lading furnished of goods under way; he could not remember having given orders for any such article. He was a shrewd business man. An impression prevailed in certain quarters that his profits were sometimes superabundant. While he was living at Niagara, some burglars from Youngstown broke into his warehouse; and after helping themselves to whatever they pleased, they left a written memorandum accounting for their not having taken with them certain other articles: it was "because they were marked too high." That he was accustomed to affix a somewhat arbitrary value to his merchandise, seems to be shewn by another story that was told of him. He was said, one day, when trade in general was very dull, to have boasted that he had that very morning made £400 by a single operation. On being questioned, it appeared that it had been simply a sudden enlargement of the figure marked on all his stock to the extent of £400. One other story of him is this:—On hearing a brother dealer lament that by a certain speculation he should, after all, make only 5 per cent., he expressed his surprise, adding that he himself would be satisfied with 3, or even 2 (taking the figures 2, 3, &c., to mean 2 hundred, 3 hundred, &c.).

Of Yonge Street itself, at which we now arrive, we propose to speak at large hereafter. Just westward from Yonge Street was the abode, surrounded by pleasant grounds and trees, of Mr. Macaulay, at a late period Sir James Macaulay, Chief Justice of the Common Pleas, a man beloved and honoured for his sterling excellence in every relation. A full-length portrait of him is preserved in Osgoode Hall. His peculiar profile, not discernible in that painting, is recalled by the engraving of Capt. Starky, which some readers will remember in *Hone's Every-Day Book*. Advancing a little further, we came in front of one of the earliest examples, in these parts, of an English-looking rustic cottage, with verandah and sloping lawn. This was occupied for a time by Major Hillier, aide-de-camp and military secretary to Sir Peregrine Maitland. The well-developed native thorn-tree on the property of Mr. Andrew Mercer is a relic of the ornamental grove that partially surrounded this cottage.

Next came the residence of Mr. Justice Boulton, a spacious family domicile of wood, painted white, situated in an extensive area, and placed far back from the road. The Judge was an English gentleman of spare Wellington physique; like many of his descendants, a lover of horses and a spirited rider; a man of wit, too, and humour, fond of listening to and narrating anecdotes of the *ben trovato* class. The successor to this family home was Holland House, a castellated

structure, round which we might expect to find the remains of a moat; a reproduction, in some points, as in name, of the building in the suburbs of London, in which was born the Judge's immediate heir, Mr. H. J. Boulton, successively Solicitor-General for Upper Canada and Chief-Justice of Newfoundland.

We then passed the grounds and house of Chief-Justice Powell. In this place we shall only record our recollection of the profound sensation created far and wide by the loss of the Chief-Justice's daughter in the packet-ship *Albion*, wrecked off the Head of Kinsale on the 22nd of April, 1822. A voyage to the mother country at that period was still a serious undertaking. We copy a contemporaneous extract from the *Cork Southern Reporter*:—"The *Albion*, whose loss at Garrettstown Bay we first mentioned in our paper of Tuesday, was one of the finest class of ships between Liverpool and New York, and was 500 tons burden. We have since learned some further particulars, by which it appears that her loss was attended with circumstances of a peculiarly afflicting nature. She had lived out the tremendous gale of the entire day on Sunday, and Captain Williams consoled the passengers, at eight o'clock in the evening, with the hope of being able to reach Liverpool on the day but one after, which cheering expectation induced almost all of the passengers, particularly the females, to retire to rest. In some short time, however, a violent squall came on, which in a moment carried away the masts, and, there being no possibility of disengaging them from the rigging, encumbered the hull so that she became unmanageable, and drifted at the mercy of the waves, till the light-house of the Old Head was discovered, the wreck still nearing in; when the Captain told the sad news to the passengers, that there was no longer any hope; and, soon after, she struck. From thenceforward all was distress and confusion. The vessel soon went to pieces, and, of the crew and passengers, only six of the former and nine of the latter were saved." The names of the passengers are added, as follows: "Mr. Benyon, a London gentleman; Mr. N. Ross, of Troy, near New York; Mr. Conyers, and his brother-in-law, Major Gough, 68th regiment; Mr. and Mrs. Clarke, Americans; Madame Gardinier and son, a boy about eight years of age; Colonel Prevost; Mr. Dwight, of Boston; Mrs. Mary Pye, of New York; Miss Powell, daughter of the Hon. William Dummer Powell, Chief-Justice of Upper Canada; Rev. Mr. Hill, Jamaica, coming home by the way of the United States; Professor Fisher, of New Haven, Connecticut; Mr. Gurnee, New York; Mr. Proctor, New York; Mr. Dupont and five other Frenchmen; Mrs. Mary Brewster; Mr. Hirst, Mr. Morrison, and Stephen Chase." The *Weekly Register* of York, of June 13, 1822, the number that contains the announcement of the wreck of the *Albion* packet, has also the following paragraph:—"Our Attorney-General arrived in London about the 22nd of March, and up to the 11th of April had daily interviews of great length with ministers. It gives us real pleasure to announce,"—so continues the editorial of the *Weekly Register*—"that his mission is likely to be attended with the most complete success, and that our relations with the Lower Provinces will be put on a firm and advantageous footing. We have no doubt that Mr. Robinson will deserve the general thanks of the country." A family party from York had embarked in the packet of the preceding month, and were, as this paragraph intimates, safe in London on the 22nd of March. The disastrous fate of the lady above named was thus rendered the more distressing to friends and relatives, as she was present in New York when that packet sailed, but was induced, through the influence of some obscure pique, not to embark therein along with her more fortunate fellow townsfolk.

After the house and grounds of Chief-Justice Powell came the property of Dr. Strachan, of whom more hereafter. It may be of some interest to note, as we pass, that the brick edifice here erected in 1818, was, like other early buildings of this description in York, constructed of materials imported from Kingston or Montreal; recalling the parallel fact that the first bricks used for building in New York were imported from Holland; just as, in the present day, (though now, of course, for a different reason,) houses are occasionally constructed at Quebec with white brick manufactured in England.

We next arrived at a large open space, much broken up by a rivulet—"Russell's Creek,"—that meandered most recklessly through it. This piece of ground was long known as Simcoe Place, and was set apart in the later plan for the extension of York westward, as a Public Square Overlooking this area from the north-west, at the present day, is one of the elms of the original forest—an unnoticeable sapling at the period referred to, but now a tree of stately dimensions

and of very graceful form, resembling that of the Greek letter Psi. It will be a matter of regret when the necessities of the case shall render the removal of this relic indispensable. At the corner to the south of this conspicuous tree, was an inn long known as the Greenland Fishery. Its sign bore on one side, quite passably done, an Arctic or Greenland scene; and on the other, vessels and boats engaged in the capture of the whale. A travelling sailor, familiar with whalers, and additionally a man of some artistic taste and skill, paid his reckoning in labour, by executing for the landlord, Mr. Wright, these spirited paintings, which proved an attraction to the house.

John Street, which passes north, by the Greenland Fishery, bears one of the Christian names of the first Governor of Upper Canada. Graves Street, on the east side of the adjoining Square bore his second Christian name; but Graves Street has, in recent times, been transformed into Simcoe Street.

When the Houses of Parliament, now to be seen stretching across Simcoe Place, were first built, a part of the design was a central pediment supported by four stone columns. This would have given dignity to the edifice. The stone platform before the principal entrance was erected, with a flight of steps leading thereto; but a momentary economy, as we suppose, led to the postponement of the ornamental superstructure. The monoliths for the intended pillars were duly cut out at a quarry near Hamilton. They long remained lying there, in an unfinished state. In the lithographic view of the Parliament Buildings, published by J. Young, their architect, in 1836, the pediment just spoken of is given as though it existed.

Along the edge of the water, below the properties, spaces and objects which we have been engaged in noticing, ran a shingly beach of a width sufficient to admit of the passage of vehicles. A succession of dry seasons, we suppose, must then have kept the waters low. In 1815, the waters of the Lake appear to have been unusually high. An almanac of that year, published by John Cameron, at York, offers the subjoined explanation of the phenomenon, from which it will seem that the Lake-level and the temperature of the air were subject to fluctuations just as they are now. "The comet which passed to the northward three years since," the writer suggests, "has sensibly affected our seasons: they have become colder; the snows fall deeper; and from lesser exhalation, and other causes, the Lakes rise much higher than usual."

The commissariat store-houses were situated here, just beyond the broken ground of Simcoe Place; long white structures of wood, with the shutters of the windows always closed; built on a level with the bay, yet having an entrance by a narrow gangway from the cliff above, on which, close by, was the guard-house, a small building, painted of a dun colour, with a roof of one slope, inclining to the south, and an arched stoup or verandah open to the north. Here a sentry was ever to be seen, pacing up and down. A light bridge over a deep water-course led up to the guard-house. Over other depressions or ravines, close by here, were long to be seen some platforms or floored areas of stout plank. These were the spaces occupied by different portions of the renowned canvas-house of the first Governor, a structure manufactured in London and imported. The convenience of its plan, and the hospitality for which it afforded room, were favourite topics among the early people of the country. We have in Bouchette's *British North America* a reference to this famous canvas house. "In the spring [*i. e.*, in 1794]," that writer says, "the Lieutenant-Governor moved to the site of the new capital [York], attended by the regiment of Queen's Rangers, and commenced at once the realization of his favourite project. His Excellency inhabited, during the summer, and through the winter, a canvas-house, which he imported expressly for the occasion; but, frail as was its substance, it was rendered exceedingly comfortable, and soon became as distinguished for the social and urbane hospitality of its venerable and gracious host, as for the peculiarity of its structure," vol. i. 80. After this allusion to the home Canadian life of the first Governor, the following remarks of de Liancourt, on the same subject, will not appear out of place:—"In his private life," the Duke says, "Gov. Simcoe is simple, plain and obliging. He inhabits [the reference now is to Newark or Niagara,] a small, miserable wooden house, which formerly was occupied by the Commissaries, who resided here on account of the navigation of the lake. His guard consists of four soldiers, who every morning come from the fort [across the river], and return thither in the evening. He lives in a noble and hospitable manner, without pride; his mind is enlightened, his character mild and obliging; he discourses with much good sense on all subjects; but his favourite topics

are his projects, and war, which seem to be the objects of his leading passions. He is acquainted with the military history of all countries: no hillock catches his eye without exciting in his mind the idea of a fort which might be constructed on the spot; and with the construction of this fort he associates the plan of operations for a campaign, especially of that which is to lead him to Philadelphia. [Gen. Simcoe appears to have been strongly of the opinion that the United States were not going to be a permanency.] On hearing his professions of an earnest desire of peace, you cannot but suppose, either that his reason must hold an absolute sway over his passion, or that he deceives himself." *Travels*, i. 241. Other traits, which doubtless at this time gave a charm to the home-life of the accomplished Governor, may be gathered from a passage in the correspondence, at a later period, of Polwhele, the historian of Cornwall, who says, in a letter addressed to the General himself, dated Manaccan, Nov. 5th, 1803:—"I have been sorely disappointed, once or twice, in missing you, whilst you were inspecting Cornwall. It was not long after your visit at my friend Mr. Hoblyn's, but I slept also at Nanswhydden. Had I met you there, the *Noctes Atticæ*, the *Cœnæ Deorum*, would have been renewed, if peradventure the chess-board intervened not; for rooks and pawns, I think, would have frightened away the Muses, familiar as rooks and pawns might have been to the suitors of Penelope." *Polwhele*, 544.

Near the Commissariat store-houses was the site of the Naval Building Yard, where an unfinished ship-of-war and the materials collected for the construction of others, were destroyed, when the United States' forces took possession of York in 1813. It appears that Bouchette had just been pointing out to the Government the exposed condition of the public property here. In a note at p. 89 of his "British North America" that officer remarks: "The defenceless situation of York, the mode of its capture, and the destruction of the large ship then on the stocks, were but too prophetically demonstrated in my report to headquarters in Lower Canada, on my return from a responsible mission to the capital of the Upper Province, in the early part of April. Indeed the communication of the result of my reconnoitering operations, and the intelligence of the successful invasion of York, and the firing of the new ship by the enemy, were received almost simultaneously." The Governor-in-Chief, Sir George Prevost, was blamed for having permitted a frigate to be laid down in an unprotected position. There was a "striking impropriety," as the Third Letter of the celebrated *Veritas* points out, "in building at York, without providing the means of security there, as the works of defence, projected by General Brock, (when he contemplated, before the war, the removal of the naval depôt from Kingston to York, by reason of the proximity of the former to the States in winter by the ice,) were discontinued by orders from below, [from Sir George Prevost, that is,] and never resumed. The position intended to have been fortified by General Brock, near York, was," *Veritas* continues, "capable of being made very strong, had his plan been executed; but as it was not, nor any other plan of defence adopted, a ship-yard without protection became an allurement to the enemy, as was felt to the cost of the inhabitants of York."

In the year 1832, the interior of the Commissariat-store, decorated with flags, was the scene of the first charitable bazaar held in these parts. It was for the relief of distress occasioned by a recent visitation of cholera. The enterprise appears to have been remarkably successful. We have a notice of it in Sibbald's *Canadian Magazine* of January, 1833, in the following terms: "All the fashionable and well-disposed attended; the band of the gallant 79th played; at each table stood a lady; and in a very short time all the articles were sold to gentlemen,—who will keep 'as the apple of their eye' the things made and presented by such hands." The sum collected on the occasion, it is added, was three hundred and eleven pounds.

Where Windsor Street now appears—with its grand iron gates at either end, inviting or forbidding the entrance of the stranger to the prim, quaint, self-contained little village within—formerly stood the abode of Mr. John Beikie, whose tall, upright, staidly-moving form, generally enveloped in a long snuff-coloured overcoat, was one of the *dramatis personæ* of York. He had been, at an early period, sheriff of the Home District; at a later time his signature was familiar to every eye, attached in the *Gazette* to notices put forth by the Executive Council of the day, of which rather aristocratic body he was the Clerk.

Passing westward, we had on the right the spacious home of Mr. Crookshank, a benevolent and excellent man, sometime Receiver-General of the Province, of whom we shall again have occasion to speak; and on the left, on a promontory suddenly jutting out into the harbour,

"Captain Bonnycastle's cottage," with garden and picturesque grove attached; all Ordnance property in reality, and once occupied by Col. Coffin. The whole has now been literally eaten away by the ruthless tooth of the steam excavator. On the beach to the west of this promontory was a much frequented bathing-place. Captain Bonnycastle, just named, was afterwards Sir Richard, and the author of "Canada as it was, is, and may be," and "Canada and the Canadians in 1846."

The name "Peter," attached to the street which flanks on the west the ancient homestead and extensive outbuildings of Mr. Crookshank, is a memento, we believe, of the president or administrator, Peter Russell.

We come here to the western boundary of the so-called New Town—the limit of the first important extension of York westward. The limit, eastward, of the New Town, was a thoroughfare known in the former day as Toronto Street, which was one street east of Yonge Street, represented now, not by the modern Toronto Street, but by Victoria Street. At the period when the plan was designed for this grand western and north-western suburb of York, Yonge Street was not opened southward farther than Lot [Queen] Street. The roadway there suddenly veered to the eastward, and then, after a short interval, passed down "Toronto Street," that is, Victoria Street, or rather a roadway a little to the west of the existing Victoria Street.—The tradition in Boston used to be, that some of the streets there followed the line of accidental cow-paths formed in the olden time in the uncleared bush; and no doubt other old American towns, like the ancient European towns generally, exhibit, in the direction of their thoroughfares, occasionally, traces of casual circumstances in the history of the first settlers on their respective sites. The practice at later periods has been to make all ways run as nearly as possible in right lines. In one or two "jogs" or irregularities, observable in the streets of the Toronto of to-day, we have memorials of early waggon tracks which ran where they most conveniently could. The slight meandering of Front Street in its course from the garrison to the site of the first Parliament Buildings, and of Britain Street, (an obscure passage between George Street and Caroline Street,) may be thus explained; as also the fact that the southern end of the present Victoria Street does not connect immediately with the present Toronto Street. This last-mentioned irregularity is a relic of the time when the great road from the north, namely, Yonge Street, on reaching Queen Street, slanted off to the eastward across vacant lots and open ground, making by the nearest and most convenient route for the market and the heart of the town.

After the laying-out in lots of the region comprehended in the first great expansion of York, of which we have spoken, inquiries were instituted by the authorities as to the improvements made by the holders of each. In the chart accompanying the report of the surveyor appointed to make the examination, the lots are coloured according to the condition of each, and appended are the following curious particulars, which smack somewhat of the ever-memorable town-plot of Eden, to which Martin Chuzzlewit was induced to repair, and which offered a lively picture of an infant metropolis in the rough. (We must represent to ourselves a chequered diagram; some of the squares white or blank; some tinted blue; some shaded black; the whole entitled "Sketch of the Part of the Town of York east of Toronto Street.")—"Explanation: The blank lots are cleared, agreeable to the notice issued from his Excellency the Lieutenant-Governor, bearing date September the fourth, 1800. The lots shaded blue are chiefly cut, but the brush not burnt; and those marked with the letter A, the brush only cut. The lots shaded black, no work done. The survey made by order of the Surveyor-General's office, bearing date April the 23rd, 1801." A more precise examination appears to have been demanded. The explanations appended to the second plan, which has squares shaded brown, in addition to those coloured blue and black, are: "1st. The blank lots are cleared. 2nd. The lots shaded black, *no work done*. 3rd. The lots shaded brown, *the brush cut and burnt*. 4th. The lots shaded blue, *the brush cut and not burnt*. N.B. The lots 1 and 2 on the north side of Newgate Street [the site subsequently of the dwelling-house of Jesse Ketchum, of whom hereafter], are mostly clear of the large timber, and some *brush cut* also, but *not burnt;* therefore omitted in the first report. This second examination done by order of the Honorable John Elmsley, Esq."

The second extension of York westward included the Government Common. The staking out of streets here was a comparatively late event. Brock Street, to which we have now approached,

had its name, of course, from the General officer slain at Queenston, and its extra width from the example set in the avenue to the north,' into which it merges after crossing Queen Street. A little to the west of Brock Street was the old military burying-ground, a clearing in the thick brushwood of the locality: of an oblong shape, its four picketted sides directed exactly towards the four cardinal points. The setting off of the neighbouring streets and lots at a different angle, caused the boundary lines of this plot to run askew to every other straight line in the vicinity.—Over how many a now forgotten and even obliterated grave have the customary farewell volleys here been fired!—those final honours to the soldier, always so touching; intended doubtless, in the old barbaric way, to be an incentive to endurance in the sound and well; and consolatory, in anticipation, to the sick and dying. In the mould of this old cemetery, what a mingling from distant quarters! Hearts finally at rest here, fluttered in their last beats, far away, at times, to old familiar scenes "beloved in vain" long ago; to villages, hedgerows, lanes, fields, in green England and Ireland, in rugged Scotland and Wales. Many a widow, standing at an open grave here, holding the hand of orphan boy or girl, has "wept her soldier dead;" not slain in the battle-field, indeed, but fallen, nevertheless, in the fulfilment of duty, before one or other of the many subtle assailants that, even in times of peace, bring the career of the military man to a premature close.—Among the remains deposited in this ancient burial-plot are those of a child of the first Governor of Upper Canada, a fact commemorated on the exterior of the mortuary chapel over his own grave in Devonshire, by a tablet on which York is spoken of as "Yorktown."—Close to the military burial-ground was once enacted a scene which might have occurred at the obsequies of a Tartar chief in the days of old. Capt. Battersby, sent out to take command of a Provincial corps, was the owner of several fine horses, to which he was greatly attached. On his being ordered home, after the war of 1812, friends and others began to make offers for the purchase of the animals: but no; he would enter into no treaty with any one on that score. What his decision had been became apparent the day before his departure from York. He then had his poor dumb favourites led out by some soldiers to the vicinity of the burying-ground; and there he caused each of them to be deliberately shot dead. He did not care to entrust to the tender mercies of strangers, in the future, the faithful creatures that had served him so well, and had borne him whithersoever he listed, so willingly and bravely. The carcasses were interred on the spot where the shooting had taken place.

Returning now again to Brock Street, and placing ourselves at the middle point of its great width—immediately before us to the north, on the ridge which bounds the view in the distance, we discern a white object. This is Spadina House, from which the avenue into which Brock Street passes, takes its name. The word Spadina itself is an Indian term modified, descriptive of a sudden rise of land like that on which the house in the distance stands. Spadina was the residence of Dr. W. W. Baldwin, to whom reference has already been made. A liberal in his political views, he nevertheless was strongly influenced by the feudal feeling which was a second nature with most persons in the British Islands some years ago. His purpose was to establish in Canada a family, whose head was to be maintained in opulence by the proceeds of an entailed estate. There was to be forever a Baldwin of Spadina. It is singular that the first inheritor of the newly-established patrimony should have been the statesman whose lot it was to carry through the Legislature of Canada the abolition of the rights of primogeniture. The son grasped more readily than the father what the genius of the North American continent will endure, and what it will not. Spadina Avenue was laid out by Dr. Baldwin on a scale that would have satisfied the designer of St. Petersburg or Washington. Its width is one hundred and twenty feet. Its length from the water's edge to the base of Spadina Hill would be nearly three miles. Garnished on both sides by a double row of full grown chestnut trees, it would vie in magnificence, when seen from an eminence, with the Long Walk at Windsor.

Eastward of Spadina House, on the same elevation of land, was Davenport, the picturesque and chateau-like home of Col. Wells, built at an early period. Col. Wells was a fine example of the English officer, whom we so often see retiring from the camp gracefully and happily into domestic life. A faithful portrait of him exists, in which he wears the gold medal of Badajoz. His sons, natural artists and arbiters of taste, inherited, along with their æsthetic gifts, also lithe and handsome persons. One of them, like his father, now a Lieutenant-Colonel in the army, was highly distinguished in the Crimea; and on revisiting Toronto after the peace with

Russia, was publicly presented with a sword of honour.—The view of the Lake and intervening forest, as seen from Davenport and Spadina, before the cultivation of the alluvial plain below, was always fine.

III.—FROM BROCK STREET TO THE OLD FRENCH FORT.

Returning again to the front. The portion of the Common that lies immediately west of the foot of Brock Street was enclosed for the first time and ornamentally planted by Mr. Jameson. Before his removal to Canada, Mr. Jameson had filled a judicial situation in the West Indies. In Canada, he was successively Attorney-General and Vice-Chancellor, the Chancellorship itself being vested in the Crown. The conversational powers of Mr. Jameson were admirable; and no slight interest attached to the pleasant talk of one who, in his younger days, had been the familiar associate of Southey, Wordsworth, and Samuel Taylor Coleridge. In a volume of poems by Hartley Coleridge, son of the philosopher, published in 1833, the three sonnets addressed "To a Friend," were addressed to Mr. Jameson, as we are informed in a note. We give the first of these little poems at length:

"When we were idlers with the loitering rills,
The need of human love we little noted:
Our love was nature; and the peace that floated
On the white mist, and dwelt upon the hills,
To sweet accord subdued our wayward wills:
One soul was ours, one mind, one heart devoted,
That, wisely doating, asked not why it doated,
And ours the unknown joy, which knowing kills.
But now I find how dear thou wert to me;
That man is more than half of nature's treasure,
Of that fair Beauty which no eye can see,
Of that sweet music which no ear can measure;
And now the streams may sing for others' pleasure,
The hills sleep on in their eternity."

The note appended, which appears only in the first edition, is as follows: "This sonnet, and the two following, my earliest attempts at that form of versification, were addressed to R. S. Jameson, Esq., on occasion of meeting him in London, after a separation of some years. He was the favourite companion of my boyhood, the active friend and sincere counsellor of my youth—'Though seas between us broad ha' roll'd' since we 'travelled side by side' last, I trust the sight of this little volume will give rise to recollections that will make him ten years younger. He is now Judge Advocate at Dominica, and husband of Mrs. Jameson, authoress of the 'Diary of an Ennuyée,' 'Loves of the Poets,' and other agreeable productions." Mr. Jameson was a man of high culture and fine literary tastes. He was, moreover, an amateur artist of no ordinary skill, as extant drawings of his in water-colours attest. His countenance, especially in his old age, was of the Jeremy Bentham stamp. It was from the house on the west of Brock Street that Mrs. Jameson dated the letters which constituted her well-known "Winter Studies and Summer Rambles." That volume thus closes: "At three o'clock in the morning, just as the moon was setting in Lake Ontario, I arrived at the door of my own house in Toronto, having been absent on this wild expedition [to the Sault] just two months." York had then been two years Toronto. (For having ventured to pass down the rapids at the Sault, she had been formally named by the Otchipways of the locality, *Was-sa-je-wun-e-qua*, "Woman of the Bright Stream.") The Preface to the American edition of Mrs. Jameson's "Characteristics of Women" was also written here. In that Introduction we can detect a touch due to the "wild expedition" just spoken of. "They say," she observes, "that as a savage proves his heroism by displaying in grim array the torn scalps of his enemies, so a woman thinks she proves her virtue by exhibiting the mangled reputations of her friends": a censure, she adds, which is just: but the propensity, she explains, is wrongly attributed to ill-nature and jealousy. "Ignorance," she proceeds, "is the main cause; ignorance of ourselves and others; and when I have heard any

female acquaintance commenting with a spiteful or a sprightly levity on the delinquencies and mistakes of their sex, I have only said to myself, 'They know not what they do.'" "Here, then," the Preface referred to thus concludes, "I present to women a little elementary manual or introduction to that knowledge of woman, in which they may learn to understand better their own nature; to judge more justly, more gently, more truly of each other,

'And in the silent hour of inward thought
To still *suspect*, yet still *revere* themselves
In lowliness of heart.'"

Mrs. Jameson was unattractive in person at first sight, although, as could scarcely fail to be the case in one so highly endowed, her features, separately considered, were fine and boldly marked. Intellectually, she was an enchantress. Besides an originality and independence of judgment on most subjects, and a facility in generalizing and reducing thought to the form of a neat aphorism, she had a strong and capacious memory, richly furnished with choice things. Her conversation was consequently of the most fascinating kind. She sang, too, in sweet taste, with a quiet softness, without display. She sketched from nature with great elegance, and designed cleverly. The seven or eight illustrations which appear in the American edition of the "Characteristics," dated at Toronto, are etched by herself, and bear her autograph, "Anna." The same is to be observed of the illustrations in the English edition of her "Commonplace Book of Thoughts, Memories, and Fancies;" and in her larger volumes on various Art-subjects. She had supereminently beautiful hands, which she always scrupulously guarded from contact with the outer air. Mrs. Jameson was a connoisseur in "hands," as we gather from her Commonplace Book, just mentioned. She there says: "There are hands of various character; the hand to catch, and the hand to hold; the hand to clasp, and the hand to grasp; the hand that has worked, or could work, and the hand that has never done anything but hold itself out to be kissed, like that of Joanna of Arragon in Raphael's picture." Her own appeared to belong to the last-named class. Though the merest trifles, we may record here one or two further personal recollections of Mrs. Jameson; of her appreciation, for example, of a very obvious quotation from Horace, to be appended to a little sketch of her own, representing a child asleep, but in danger from a serpent near; and of her glad acceptance of an out-of-the-way scrap from the "Vanity of Arts and Sciences" of Cornelius Agrippa, which proved the antiquity of *charivaries*. "Do you not know that the intervention of a lady's hand is often requisite to the finish of a young man's education?" was a suggestive question drawn forth by some youthful maladroitness. Another characteristic dictum, "Society is one vast masquerade of manners," is remembered, as having been probably at the time a new idea to ourselves in particular. The irrational conventionalities of society she persistently sought to counteract, by her words on suitable occasions, and by her example, especially in point of dress, which did not strictly conform to the customs in vogue.—Among the local characters relished by her in Canada was Mr. Justice Hagerman, who united in himself some of the bluntness of Johnson with the physique of Charles James Fox. She set a high value on his talents, although we have heard her, at once playfully and graphically, speak of him as "that great mastiff, Hagerman." From Mrs. Jameson we learned that "Gaytay" was a sufficient approximation in English to the pronunciation of "Goethe." She had been intimately acquainted with the poet at Weimar.—In the Kensington Museum there is a bust, exceedingly fine, of Mrs. Jameson, by the celebrated sculptor Gibson, executed by him, as the inscription speaks, "in her honour." The head and countenance are of course somewhat idealized; but the likeness is well retained. In the small Boston edition of the "Legends of the Madonna" there is an interesting portrait of Mrs. Jameson, giving her appearance when far advanced in years.

Westward from the house and grounds whose associations have detained us so long, the space that was known as the Government Common is now traversed from south to north by two streets. Their names possess some interest, the first of them being that of the Duke of Portland, Viceroy of Ireland, Colonial Secretary, and three times Prime Minister in the reign of George the Third; the other, that of Earl Bathurst, Secretary for the Colonies in George the Fourth's time.

Eastward of Bathurst Street, in the direction of the military burying-ground, there was long marked out by a furrow in the sward the ground-plan of a church. In 1830, the military chap-

lain, Mr. Hudson, addressed to the commander of the forces a complaint "of the very great inconvenience to which the troops are exposed in having to march so far to the place of worship, particularly when the weather and roads are so unfavourable during a greater part of the year in this country, the distance from the Barracks to the Church being two miles:" adding, "In June last, the roads were in such a state as to prevent the Troops from attending Church for four successive Sundays." He then suggested "the propriety of erecting a chapel on the Government reserve for the accommodation of the Troops." The Horse Guards refused to undertake the erection of a chapel here, but made a donation of one thousand pounds towards the re-edification of St. James' Church, "on condition that accommodation should be permanently provided for His Majesty's Troops." The outline in the turf was a relic of Mr. Hudson's suggestion. The line that defined the limit of the Government Common to the north and east, (and west, of course, likewise,) prior to its division into building lots, was a portion of the circumference of a great circle, "of a radius of 1000 yards, more or less," whose centre was the Fort. On the old plans of York, arcs of this great circle are traced, with two interior concentric arcs, of radii respectively of eight and five hundred yards.

We now soon arrive at the ravine of the "Garrison Creek." We have heard that in the rivulet below, for some distance up the valley, before the clearing away of the woods, salmon used to be taken at certain seasons of the year. Crossing the stream, and ascending to the arched gateway of the fort (we are speaking of it as it used to be), we pass between the strong iron-studded portals, which are thrown back: we pass a sentry just within the gate, and the guard-house on the left. At present we do not tarry within the enclosure of the Fort. We simply glance at the loopholed block-house on the one side, and the quarters of the men, the officers, and the commandant on the other; and we hurry across the gravelled area, recalling rapidly a series of spirit-stirring ordinal numbers—49th, 41st, 68th, 79th, 42nd, 15th, 32nd, 1st—each suggestive of a gallant assemblage at some time here; of a vigorous, finely-disciplined, ready-aye-ready group, that, like the successive generations on the stage of human life, came and went just once, as it were—as the years rolled on, and the eye saw them again no more. We pass out through the western gate to the large open green space which lies on the farther side. This is the Garrison Reserve. It bears the same relation to the modern Toronto and the ancient York as the Plains of Abraham do to Quebec. It was here that the struggle took place, in the olden time, that led to the capture of the town. In both cases the leader of the aggressive expedition "fell victorious." But the analogy holds no further; as, in the case of the inferior conquest, the successful power did not retain permanent possession.

The Wolfe's Cove, the landing-place, we mean, of the invader, on the occasion referred to, was just within the curve of the Humber Bay, far to the west, where Queen Street now skirts the beach for a short distance and then emerges on it. The intention had been to land more to the eastward, but the vessels containing the hostile force were driven westward by the winds.

The debarkation was opposed by a handful of Indians, under Major Givins. The Glengarry Fencibles had been despatched to aid in this service, but, attempting to approach the spot by a back road, they lost their way. A tradition exists that the name of the Grenadiers' Pond, a lagoon a little to the west, one of the ancient outlets of the waters of the Humber, is connected with the disastrous bewilderment of a party of the regular troops at this critical period. It is at the same time asserted that the name "Grenadiers' Pond" was familiar previously. At length companies of the Eighth Regiment, of the Royal Newfoundland Regiment, and of Incorporated Militia, made their appearance on the ground, and disputed the progress inland of the enemy. After suffering severely, they retired towards the Fort. This was the existing Fort. The result is now matter of history, and need not be detailed. As portions of the cliff have fallen away from time to time along the shore here, numerous skeletons have been exposed to view, relics of friend and foe slain on the adjacent common, where, also, military ornaments and fragments of fire-arms, used frequently to be dug up. Some of the bones referred to, however, may have been remains of early French and Indian traders.

The site of the original French stockade, established here in the middle of the last century, was nearly at the middle point between the landing-place of the United States force in 1813, and the existing Fort. Before the erection of the white cut-stone Barracks, several earthworks and grass-grown excavations marked the spot. These ruins, which we have often visited, were popularly designated "The Old French Fort."

It is interesting to observe the probable process by which the appellation "Toronto" came to be attached to the Trading-post here. Its real name, as imposed by the French authorities, was Fort Rouillé, from a French colonial minister of that name, in 1749–54. This we learn from a despatch of M. de Longueil, Governor-in-Chief of Canada in 1752. And "Toronto," at that period, according to contemporaneous maps denoted Lake Simcoe and the surrounding region. Thus in Carver's Travels through North America in 1766–8, in p. 172, we read, "On the north-west part of this lake [Ontario], and to the south of Lake Huron, is a tribe of Indians called the Mississegues, whose town is denominated Toronto, from the lake [*i. e.* Lake Simcoe] on which it lies, but they are not very numerous." This agrees with Lahontan's statements in 1687, which will be given hereafter. The supposition that "Toronto" is a changed Italian word, the proper name of either a place or a person, is entirely gratuitous, and wholly destitute of foundation.

Fort Rouillé was the terminus on Lake Ontario of one of the Iroquois highways to Lake Toronto. From being, as it were, a "Toronto station," the point of debarkation for an overland tramp to Toronto, it grew by some chance to be known as Toronto itself. The terminus *a quo* usurped the name of the terminus *ad quem*. (Another starting-point for the same destination was Teyoyagon or Telaiagon, further to the east; probably Bowmanville.)

Looking at the geographical position of Lake Simcoe, almost at the summit-level of the watershed between Lakes Huron and Ontario; communicating with both by trails along river valleys; with Lake Huron by Willow Creek and the Notawasaga, by the Coldwater and by the Severn;—with Lake Ontario by the Holland River and the Humber, by Black River and the Seugog;—communicating, moreover, after portages, eastward, with the chain of lakes that find their outlet by the Trent and the Bay of Quinté,—and even with the farther distant waters of the Ottawa—regarding, we say, the facilities for intercourse with the West and North, with the South and East, which centre here, we may conceive Lake Simcoe and its neighbourhood to have been, in the olden time, the true "Place of Meeting," said to be denoted by the (no doubt greatly manipulated) Iroquois word "Toronto;" the Place of Meeting, either of tribes or of convenient water-ways; or even, it may be, the Place of Meeting where deadly passages of arms repeatedly occurred between hostile tribes. One of the principal fighting-grounds in the contest between the Western Hurons and Ojibways, and their (at length victorious) assailants, the Iroquois of the south side of Lake Ontario, in the middle of the seventeenth century, was the district to the north-west of Lake Simcoe, between Couchiching and Notawasaga Bay. In the neighbourhood of Barrie, as elsewhere, barrows formerly existed which were found to contain surprising quantities of human remains, deposited without order, the skulls often bearing marks of violence. Hereabout also have been dug up many flint axes and arrow-heads. (To account for large gatherings of human remains, however, it is not necessary to suppose battles. It was the native practice to transport to special burial-spots, periodically, in a formal manner, the dead of temporary encampments.)

IV.—FROM THE GARRISON BACK TO THE PLACE OF BEGINNING.

We now enter again the existing Fort; passing back through the western gate. On our right we have the site of the magazine which so fatally exploded in 1813: we learn from Gen. Sheaffe's despatch to Sir George Provost, that it was "in the western battery." In close proximity to the magazine was the Government House of the day, an extensive rambling cluster of one-storey buildings, all "riddled" or shattered to pieces by the concussion, when the explosion took place. The ruin that thus befel the Governor's residence led, on the restoration of peace, to the purchase of Mr. Justice Elmsley's house on King street, and its conversion into "Government House."

From the main battery, which (with a small semi-circular bastion for the venerable flag-staff of the Fort) extends along the brow of the palisaded bank, south of the parade, the royal salutes, resounding down and across the lake, used to be fired on the arrival and departure of the Lieutenant-Governor, and at the opening and closing of the Legislature.

From the south-eastern bastion, overlooking the ravine below, a twelve-pounder was dis-

charged every day at noon. "The twelve-o'clock gun," when discontinued, was long missed with regret.

At the time of the invasion in 1812, the garrison of York was manned by the 3rd regiment of York militia. We have before us a relic of the period, in the form of the contemporary regimental order book of the Fort. An entry of the 29th of July, 1812, showing the approach of serious work, has an especial local interest. "In consequence of an order from Major-General Brock, commanding the forces, for a detachment of volunteers, under the command of Major Allan, to hold themselves in readiness to proceed in batteaux from the Head of the Lake to-morrow at 2 o'clock, the following officers, non-commissioned officers and privates will hold themselves in readiness to proceed at 2 o'clock, for the purpose of being fitted with caps, blankets and haversacks, as well as to draw provisions. On their arrival at the Head of the Lake, regimental coats and canteens will be ready to be issued to them." (The names are then given.) "Capt. Heward, Lieut. Richardson, Lieut. Jarvis, Lieut. Robinson. Sergeants Knott, Humberstone, Bond, Bridgeford."

In view of the test to which the citizen-soldiers were about to be subjected, the General, like a good officer, sought to get them all in good humour. "Major-General Brock," the order-book proceeds, "has desired me [Captain Stephen Heward] to acquaint the detachment under my command, of his high approbation of their orderly conduct and good discipline while under arms: that their exercise and marching far exceeded any that he had seen in the Province. And in particular he directed me to acquaint the officers how much he is pleased with their appearance in uniform, and their perfect knowledge of their duty." On the 13th of August, we learn from other sources, Brock was on the Western Frontier with 700 soldiers, including the volunteers from York, and 600 Indians; and on the 16th the old flag was waving from the fortress of Detroit; but, on the 13th of October, the brave General, though again a victor in the engagement, was himself a lifeless corpse on the slopes above Queenston; and in April of the following year, York, as we have already seen, was in the hands of the enemy. Such are the ups and downs of war. It is mentioned that "Push on the York Volunteers!" was the order issuing from the lips of the General, at the moment of the fatal shot. From the order-book referred to, we learn that "Toronto" was the parole or countersign of the garrison on the 23rd July, 1812.

The knoll on the east side of the Garrison Creek was covered with a number of buildings for the accommodation of troops, in addision to the barracks within the fort. Here also stood a blockhouse. Eastward were the surgeon's quarters, overhanging the bay; and further eastward still, were the commandant's quarters, a structure popularly known, by some freak of military language, as Lambeth Palace. Here for a time resided Major-General Æneas Shaw, afterwards the owner and occupant of Oak Hill.

On the beach below the knoll there continued to be, for a number of years, a row of cannon, dismounted, duly spiked and otherwise disabled, memorials of the capture in 1813, when these guns were rendered useless by the regular troops before their retreat to Kingston. The pebbles on the shore about here were also plentifully mixed with loose canister shot, washed up by the waves, after their submersion in the bay on the same occasion.

From the little eminence just referred to, along the edge of the cliff, ran a gravel walk, which led first to the Guard House over the Commissariat Stores, in a direct line, with the exception of a slight divergence occasioned by "Capt. Bonnycastle's cottage;" and then eastward into the Town. Where ravines occurred, cut in the drift by water-courses into the bay, the gulf was spanned by a bridge of hewn logs. This walk, kept in order for many years by the military authorities, was the representative of the path first worn bare by the soft tread of the Indian. From its agreeableness, looking out as it did, throughout its whole length, over the Harbour and Lake, this walk gave birth to the idea, which became a fixed one in the minds of the early people of the place, that there was to be in perpetuity, in front of the whole town, a pleasant promenade, on which the burghers and their families should take the air and disport themselves generally. The Royal Patent by which this sentimental walk is provided for and decreed, issued on the 14th day of July, in the year 1818, designates it by the interesting old name of MALL, and nominates "John Beverley Robinson, William Allan, George Crookshank, Duncan Cameron and Grant Powell, all of the town of York, Esquires, their heirs and assigns forever, as trustees to hold the same for the use and benefit of the inhabitants." Stretching from Peter

Street in the west to the Reserve for Government Buildings in the east, of a breadth varying between four and five chains, following the line of Front Street on the one side, and the several turnings and windings of the bank on the other, the area of land contained in this Mall was "thirty acres, more or less, with allowance for the several cross streets leading from the said town to the water." The paucity of open squares in the early plans of York may be partly accounted for by this provision made for a spacious Public Walk.

While the archæologist must regret the many old landmarks which were ruthlessly shorn away in the construction of the modern esplanade, he must, nevertheless, contemplate with never-ceasing admiration that great and laudable work. It has done for Toronto what the Thames embankment has effected for London. Besides vast sanitary advantages accruing, it has created space for the erection of a new front to the town. It has made room for a broad promenade some two or three miles in length, not, indeed, of the *fair niente* type, but with double and treble railway tracks abreast of itself, all open to the deep water of the harbour on one side, and flanked almost throughout the whole length on the other, by a series of warehouses, mills, factories and depôts, destined to increase every year in importance. The sights and sounds every day, along this combination of roadways and its surroundings, are unlike anything dreamt of by the framers of the old Patent of 1818. But it cannot be said that the idea contained in that document has been wholly departed from: nay, it must be confessed that it has been grandly realized in a manner and on a scale adapted to the requirements of these latter days.

For some time, Front Street, above the Esplanade, continued to be a raised terrace, from which pleasant views and fresh lake air could be obtained; and attempts were made, at several points along its southern verge, to establish a double row of shade trees, which should recall in future ages the primitive oaks and elms that overlooked the margin of the harbour. But soon the erection of tall buildings on the newly-made land below, began to shut out the view and the breezes, and to discourage attempts at ornamentation by the planting of trees.

It is to be regretted, however, that the title of *Mall* has not yet been applied to some public walk in the town. Archaic sounds like these—reeve, warden, provost, recorder, House of Commons, railway (not *road*), dugway, *mall*—like the chimes in some of our towers, and the sung-service in some of our churches—associated all with memories of the old world across the seas—help, in cases where the imagination is paramount, to reconcile the exile from the British Islands to his adopted home, and even to attach him to it. Incorporated into our common local speech, and so perpetuated, they may also be hereafter subsidiary mementoes of our descent as a people, when all connection, save that of history, with the ancient home of our forefathers, will have ceased.

The gravelled path above described, in conjunction with a track for wheels extending along the cliff from the Fort to the town, and to the grounds of the Parliamentary buildings eastward of the town, led at a period which falls within the limits of these recollections, to the construction, or rather, as we shall see, the reconstruction, of a carriage-drive to the sands beyond that point, with bridges over the greater and lesser Don. By these means the "Island" was reached for a time, and the long lines of lake-beach on its southern side, eastward towards Scarborough Heights, and westward towards the Light-house and Gibraltar Point.

All the old accounts of York in the topographical dictionaries of "sixty years since," spoke of the salubriousness of the peninsula which forms the harbour. Even the aborigines, it was added, had recourse to that spot for sanatory purposes. All this was probably derived from Surveyor-General Smyth's description of the locality accompanying the Map of Upper Canada, published in London by W. Faden, Charing Cross. That document sets forth that "the long beach or peninsula, which affords a most delightful ride, is considered so healthy by the Indians, that they resort to it whenever indisposed." But during the long interval from 1812 to 1835, no means of access to the healthy strand referred to existed, except by boat.

There were indeed two narrow necks, by which the long outer breakwater which forms the harbour was connected with the mainland; one to the east, the isthmus proper; the other, a sandy ridge some distance to the west, passing across from the peninsula to the shore, and dividing the included waters into two basins; Ashbridge's Bay, to the east; York Harbour, to the west. The sandy ridge in question was in a measure the product of the silt brought down by the Don, and thrown continually back by the waves in the bay after winds from

the west. Eastward, the same silt spread itself out and formed the marshes in that direction tending in fact to the filling up of Ashbridge's Bay, so long as that sheet of water remained and-locked. As rivers are often seen to do in similar circumstances, the Don, at the point where it was first about to enter the harbour, had taken a sudden bend and formed a long reach parallel with the sheet of water into which it finally discharged itself. Prior to 1812, a bridge had spanned the river here at its mouth, and a road practicable for vehicles had crossed it. On an early map of these parts, the road over the bridge is marked, "Road from York to the Light-house." Health alone, however, was not the object of wayfarers by that route. A race-course had been laid out on the westernmost isthmus of the peninsula, and races were periodically held there, twelve horses at a time being, as we have been assured, occasionally seen engaged in the contest. The hippodrome in question was not a ring, but a kind of long, straight, level stadium, extending from the south end of the second bridge to the margin of the lake. The invasion of 1813 had been for some time threatened. As a precautionary measure of defence, all the bridges in the direction of the Island were taken down. An earthwork was thrown up across the narrow ridge that separated the Don from the bay; and in addition, at the point where that river was first apparently about to enter the harbour, a trench was cut across, and the waters of the stream admitted into it. As years passed on, the new channel, at first comparatively insignificant, became, by a natural process, a deep and wide outlet, known as the Lesser Don, a convenient short-cut for skiffs and canoes from the bay into the river, and from the river into the bay. In the plan, above referred to, of the year 1811, there is no Little Don. A pond or inlet represents it, stretching in from the bay towards the river. A bridge spans this inlet. Another crosses the Don itself at its mouth. There is a bridge also over the ravine through which flows the rivulet by the Parliament Buildings. A block-house on the south-west bank of this stream guards the bridge.

After the return of peace, the absence of bridges, and the existence, in addition, of a second formidable water-filled moat, soon began to be matters of regret to the inhabitants of York, who found themselves so uncomfortably cut off from easy access to the peninsula. We learn from the *Upper Canada Gazette*, of April 15, 1822, published at York, that "a public subscription among the inhabitants had been entered into, to defray the expense of erecting two bridges on the River Don, leading from this town towards the south, to the Peninsula." And subjoined are the leading names of the place, guaranteeing various sums, in all amounting to £108 5s. The timber was presented by Peter Robinson, Esq., M.P.P. The estimated expense of the undertaking was £325. The following names appear for various sums—fifty, twenty, ten, five and two dollars:—Major Hillier, Rev. Dr. Strachan, Hon. J. H. Dunn, Hon. James Baby. Mr. Justice Boulton, John Small, Henry Boulton, Col. Coffin, Thomas Ridout, sen., W. Allan, Grant Powell, Samuel Ridout, J. S. Baldwin, S. Heward, James E. Small, Chas. Small, S. Washburn, W. J. Macaulay, G. Crookshank, A. Mercer, George Boulton, Thomas Taylor, Joseph Spragge, George Hamilton, R. E. Prentice, A. Warffe, W. B. Jarvis, B. Turquand, John Denison, sen., George Denison, John and George Monro, Henry Drean, Peter McDougall, Geo. Duggan, James Nation, Thomas Bright, W. B. Robinson, J. W. Gamble, William Proudfoot, Jesse Ketchum, D. Brooke, jun., R. C. Henderson, David Stegman, L. Fairbanks, Geo. Playter, Joseph Rogers, John French, W. Roe, Thomas Sullivan, John Hay, J. Biglow, John Elliott.

On the strength of the sums thus promised, an engineer, Mr. E. Angell, began the erection of the bridge over the Greater Don. The *Gazette* before us reports that it was being constructed "with hewn timbers, on the most approved *European* principle." (There is point in the italicised word: it hints the impolicy of employing United States engineers for such works.) The paper adds that "the one bridge over the Great Don, consisting of five arches, is in a forwar state; and the other, of one arch, over the Little Don, will be completed in or before the month of July next, when this line of road will be opened." It is subjoined that "subscriptions will continue to be received by A. Mercer, Esq., J. Dennis, York, and also by the Committee, Thomas Bright, William Smith and E. Angell."

By the *Weekly Register* of June 19, in the following year, it appears that the engineer, in commencing the bridge, before the amount of its cost was guaranteed, had calculated without his host; and, as is usually the case with those who draw in advance on the proceeds of a supposed public enthusiasm, had been brought into difficulties. We accordingly find that "on Friday

evening last, pursuant to public notice given in the *Upper Canada Gazette*, a meeting of the subscribers, and other inhabitants of the town of York, was held at the house of Mr. Phair, in the Market-place, for the purpose of taking into consideration the circumstances in which the engineer had been placed by constructing a bridge, the charges of which were to be defrayed by voluntary subscriptions, over the mouth of the river Don." Resolutions were passed on the occasion, approving of Mr. Angell's proceedings, and calling for additional donations. A new committee was now appointed, consisting of H. J. Boulton, Esq., Dr. Widmer, S. Heward, Esq., Charles Small, Esq., and Allan McNab, Esq.—The editor of the *Weekly Register* (Fothergill,) thus notices the meeting: "It is satisfactory to find that there is at length some probability of the bridge over the Don in this vicinity being completed. We are, ourselves, the more anxious on this account, from the hope there is reason to entertain that these and other improvements in the neighbourhood will eventually lead to a draining of the great marsh at the east end of this town; for until that is done, it is utterly impossible that the place can be healthy at all seasons of the year. The public are not sufficiently impressed with the alarming insalubrity of such situations. We beg to refer our readers to a very interesting letter from Dr. Priestly to Sir John Pringle in the Philosophical Transactions for 1773; and another from Dr. Price to Dr. Horsley in the same work in 1774; both on this subject, which throw considerable light upon it. We have it in contemplation to republish these letters in this work, as being highly interesting to many persons, and applicable to various situations in this country, but particularly to the neighbourhood of York."

The desired additional subscriptions do not appear to have come in. The works at the mouth of the Don proper were brought to a stand-still. The bridge over the Lesser Don was not commenced. Thus matters remained for the long interval of ten years. Every inhabitant of York, able to indulge in the luxury of a carriage, or a saddle horse, or given to extensive pedestrian excursions, continued to regret the inaccessibleness of the peninsula. Especially among the families of the military, accustomed to the surroundings of sea-coast towns at home, did the desire exist, to be able, at will, to take a drive, or a canter, or a vigorous constitutional on the sands of the peninsula, where, on the one hand, the bold escarpments in the distance to the eastward, on the other, the ocean-like horizon, and immediately in front the long rollers of surf tumbling in, all helped to stir recollections of (we will suppose) Dawlish or Torquay.

In 1824, through the intervention of Sir John Colborne, and by means of a subsidy from the military chest, the works on both outlets of the Don were re-commenced. In 1835 the bridges were completed. On the 22nd of August in that year they were handed over by the military authorities to the town, now no longer York, but Toronto. Some old-world formalities were observed on the occasion. The civic authorities approached the new structures in procession; a barricade at the first bridge arrested their progress. A guard stationed there also forbade further advance. The officer in command, Capt. Bonnycastle, appears, and the Mayor and Corporation are informed that the two bridges before them are, by the command of the Lieutenant-Governor, presented to them as a free gift, for the benefit of the inhabitants, that they may in all time to come be enabled to enjoy the salubrious air of the peninsula; the only stipulation being that the bridges should be free of toll forever to the troops, stores, and ordnance of the sovereign. The mayor, who, as eye-witnesses report, was arrayed in an official robe of purple velvet lined with scarlet, read the following reply: "Sir,—On the part of His Majesty's faithful and loyal city of Toronto, I receive at your hands the investiture of these bridges, erected by command of His Excellency the Lieutenant-Governor, and now delivered to the Corporation for the benefit and accommodation of the citizens. In the name of the Common Council and the citizens of Toronto, I beg you to convey to His Excellency the grateful feelings with which this new instance of the bounty of our most gracious sovereign is received; and I take this occasion on behalf of the city to renew our assurances of loyalty and attachment to His Majesty's person and government, and to pray, through His Excellency, a continuance of royal favour towards this city. I have, on the part of the corporation and citizens, to request you to assure His Excellency the Lieutenant-Governor that His Excellency's desire and generous exertions for the health and welfare of the inhabitants of this city are duly and gratefully appreciated; and I beg you to convey to His Excellency the best wishes of myself and my fellow-citizens for the health and happiness of His Excellency and family. Permit me, Sir, for myself and brethren,

to thank you for the very handsome and complimentary manner in which you have carried His Excellency's commands into execution." "Immediately," the narrative of this ceremonial continues, "the band, who were stationed on the bridge, struck up the heart-stirring air, 'God save the King,' during the performance of which the gentlemen of the Corporation, followed by a large number of the inhabitants, passed uncovered over the bridge. Three cheers were then given respectively for the King, for His Excellency the Lieutenant-Governor, for the Mayor and Council of the City of Toronto, and for Capt. Bonnycastle. The gentlemanly and dignified manner in which both the addresses were read did credit to the gentlemen on whom these duties devolved; and the good order and good humour that prevailed among the spectators present were exceedingly gratifying." We take this account from the Toronto *Patriot* of August 28th, 1835, wherein it is copied from the *Christian Guardian*. Mr. R. B. Sullivan, the functionary who represented the city on the occasion just described, was the second mayor of Toronto. He was afterwards one of the Judges of the Court of Common Pleas. The bridges thus ceremoniously presented and received had a short-lived existence. They were, a few years afterwards, seriously damaged during the breaking up of the ice, and then carried away bodily in one of the spring freshets to which the Don is subject.

NOVEMBER METEORS—1868.

We are informed by Professor Kingston, that some errors occur in the extract from the *Globe*, which appears on page 86 of our last number. The summary, there given should be as follows:—

Number of meteors counted at the Magnetic Observatory, Toronto, on the nights of November 13–14, 1867 and 1868.

	1867.	1868.
Before midnight	0	173
Midnight to 1 A.M. of November 14	20	329
1 A.M. to 2 " "	44	583
2 " 3 " "	123	489
3 " 4 " "	560	375
4 " 5 " "	1345	572
5 " 6 " "	195	365
Totals	2287	2886

CANADIAN INSTITUTE.

ANNUAL REPORT OF THE COUNCIL FOR THE YEAR 1867-'68.

The Council of the Canadian Institute have the honor to present the following Report of the proceedings of the Society for the past year, from 1st December, 1867, to the 30th November, 1868.

MEMBERSHIP.

The present state of Membership is as follows:

Members at commencement of Session, 1st December, 1867		374
" Elected during Session 1867-'68		3
		377
Deduct.		
Deaths	7	
Withdrawn	12	
Left the Province	2	
Non-payment of subscription	2	
		23
Total, 30th November, 1868		354
Composed of		
Honorary members		4
Life members		30
Corresponding members		5
Ordinary members		315
Total		354

COMMUNICATIONS.

The following list of papers, read at the ordinary meetings held during the Session, will be found to contain many valuable communications:

7th December, 1867.—Rev. Prof. W. Hincks, F.L.S., &c., "On the Molluscous Animals."

14th December, 1867 (*Medical Section*).—"Discussion on the subject of Ventilation, with especial reference to Public Buildings."

21st December, 1867.—The Annual Report of the Council was read by the Secretary, and adopted.

Prof. D. Wilson, LL.D., "Philological enquiry into the progress of the early Anglo-Saxons in Maritime Art."

11th January, 1868.—President Prof. H. Croft, D.C.L., read the Annual Address.

25th January, 1868.—Rev. Prof. W. Hincks, E.L.S., &c.—Continuation of his communication on "The Classification of Molluscous Animals."

Hon. G. W. Allan "Exhibited the original document of the Articles of Capitulation of the Town of York (now Toronto), April, 1813. Signed

by General Dearborn and Commodore Chauncy for the United States, and by Lieutenant-Colonel Chewett, Major Allan and others, including the late Chief Justice Robinson, &c., on the part of the citizens and Canadian Militia."

1*st February*, 1868 (*Medical Section*).—Dr. J. Thorburn "Introduced the subject of Small-pox and its treatment, referring to the best mode of preventing pitting."

Dr. Cumming read "Sir J. Y. Simpson's paper on Stamping out Small-pox."

Dr. Ogden "Reported a case, A. B., a young woman *æt.* 22, who became anæmic about October last. The case is called 'What is it?'"

8*th February*, 1868.—A. E. Williamson, Esq., C.E., "The Tehuantepec route for a Railway across the Isthmus to the Pacific."

15*th February*, 1868 (*Medical Section*).—"A Discussion on the code of Ethics for the Medical Association of Ontario."

22*nd February*, 1868.—Prof. D. Wilson, LL.D., "Remarks on the wisdom of Government with regard to their treatment of the Indians."

29*th February*, 1868 (*Medical Section*).—"Further discussion and adoption of a code of Ethics."

7*th March*, 1868.—Prof. J. B. Cherriman, M.A., "On the recent Theories of the Sun."

21*st March*, 1868.—Prof. D. Wilson, LL.D., "Notice of dated traces of European Immigration to British America in the Seventeenth Century." Stone found by Mr. Haliburton at Port Royal, Nova Scotia, bearing date 1606, was exhibited.

Prof. E. J. Chapman, Ph. D., "Gold assays critically considered."

28*th March*, 1868 (*Medical Section*).—Dr. Hodder, "Report of cases of Stone in the Bladder."

4*th April*, 1868.—Rev. J. McCaul, LL.D., "On Leaden Seals found in England, at Brough-on-Stanmore and Felixburgh in Suffolk, belonging to the time when the Romans occupied Britain; Fragment of tesselated pavement dug up near Chester; also an inscription found in Hadrian's Wall near Hexham and one found at Caerleon, Monmouthshire."

Rev. Dr. Scadding, "Exhibited a fragment of Brick taken from a Roman Wall at Verulam, St. Albans; also a Coin of Carausius."

Mr. Williamson, "Exhibited a very interesting collection of Shells and native curiosities from Vera Cruz, and other places in Mexico."

Professor Bell, from Nova Scotia, "Made some very interesting and instructive remarks on the Nova Scotia Gold Fields."

Professor E. J. Chapman, Ph. D., "Announced his discovery of gold in some of the lead and copper ores of the north shore of Lake Superior."

11*th April*, 1868 (*Medical Section*).—"The subject of injuries to the Spine was discussed, by the several members present."

2*nd May*, 1868 (*Medical Section*).—Dr. Cumming, "Read a Paper containing ten clauses or propositions in regard to Hospital management and attendance."

(The Treasurer's Account, &c., will be published in our next number.)

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—JANUARY, 1868.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17m. 33s. *West.* *Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°. 6 A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 PM	MEAN.	Excess of Mean above Normal.	Tension of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N.	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Direction of Wind. 6 A.M.	2 P.M.	10 P.M	Resultant.	Velocity of Wind. 6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN	Rain in Inches.	Snow in Inches.
					°	°	°	°																				
1	29.387	29.026	28.975	29.1193	29.8	31.3	28.9	29.88	+ 4.67	.154	.160	.131	.151	93	90	89	91	E b s	S E	S W b W	S 30 E	16.0	11.0	4.0	4.61	9.06	...	1.5
2	.111	.139	29.221	.1612	29.1	35.2	33.1	32.22	+ 7.02	.141	.183	.167	.163	87	89	88	89	S W b W	S W	S W	S 58 W	11.0	5.0	3.0	3.93	4.00	...	...
3	.277	.329	.293	.3025	37.0	33.8	31.6	31.00	+ 5.85	.129	.158	.163	.155	88	81	91	89	S W	Calm.	N b E	N 73 E	2.4	0.0	6.4	2.26	5.44	...	1.0
4	.094	.258	.604	.3562	31.3	27.0	25.2	27.83	+ 1.90	.166	.129	.115	.132	95	88	85	89	N N E	N E	N N E	N 42 E	14.2	4.8	4.6	5.95	6.10	...	0.8
5	.881	.945	—	—	17.2	17.9	—	—	—	.081	.085	—	—	85	87	—	—	N E	N E	N E b N	N 35 E	5.5	4.0	3.1	4.58	4.62	...	...
6	.911	.828	.734	.8130	15.0	19.4	26.2	20.50	— 4.63	.082	.068	.116	.090	95	65	82	81	N N E	N E	E	N 51 E	8.2	11.0	12.0	9.69	10.01	...	Inap.
7	.674	.661	.695	.6728	18.3	23.0	23.3	21.97	— 3.17	.087	.106	.110	.104	87	86	87	88	N N E	N b W	Calm.	N 5 E	11.5	3.0	0.0	3.59	4.03	Inap.	0.2
8	.671	.603	.489	.5800	24.8	32.4	23.0	25.88	+ 0.75	.120	.146	.098	.118	90	79	79	84	N W b N	N W b N	W S W	N 85 W	3.2	1.2	6.2	5.76	6.92	...	0.4
9	.433	.477	.535	.4902	9.6	10.4	5.0	7.72	—17.42	.047	.026	.038	.037	69	37	68	59	W	W b S	W S W	S 77 W	24.0	24.0	20.4	20.34	20.46	...	...
10	.434	.421	.391	.4382	8.9	10.7	13.2	9.43	—16.62	.035	.054	.066	.054	65	74	83	77	W b S	W S W	W S W	S 61 W	18.4	17.0	18.5	14.08	14.13	...	Inap.
11	.390	.422	.651	.4852	10.7	17.2	7.1	11.32	—13.73	.064	.081	.053	.066	92	85	88	87	W S W	W	W	N 64 W	7.8	12.2	6.0	8.48	9.63	...	Inap.
12	.801	.888	—	—	—5.5	12.2	—	—	—	.029	.059	—	—	86	78	—	—	N N W	W S W	S W b W	S 75 W	4.7	7.0	13.3	8.21	9.06	...	...
13	.988	30.046	30.124	30.0657	11.1	16.8	11.4	12.80	—12.28	.060	.066	.062	.062	83	72	85	79	W b S	W	W b S	S 80 W	11.6	20.5	7.4	10.79	10.95	...	...
14	30.130	29.934	29.712	29.9083	11.1	12.5	17.9	14.80	—10.30	.060	.062	.091	.074	83	80	94	86	N	N E	E b N	N 43 E	7.0	15.0	15.5	11.42	12.04	...	6.0
15	29.539	.487	.476	.4968	11.8	26.0	14.0	16.82	— 8.28	.063	.105	.062	.077	86	75	76	80	N	W S W	W S W	S 75 W	8.5	11.0	10.2	7.56	8.89	...	0.1
16	.457	.432	.456	.4482	10.0	16.8	13.6	13.48	—11.52	.059	.073	.067	.066	87	78	83	81	W S W	S W b W	W b S	S 64 W	13.4	13.0	12.0	10.25	10.49	...	0.1
17	.489	.532	.609	.5477	10.0	20.1	19.4	16.13	— 8.88	.059	.091	.080	.074	87	85	76	80	W b S	Calm.	S W b W	S 73 W	6.5	0.0	11.0	6.57	6.88	...	...
18	.596	.612	.776	.6747	16.5	18.3	10.0	13.90	—11.07	.083	.087	.064	.072	90	87	78	85	S W b W	S W b W	S W b W	S 58 W	8.4	10.0	5.4	6.40	6.48	...	0.2
19	.892	.812	—	—	2.4	23.3	—	—	—	.041	.080	—	—	83	64	—	—	W b S	S W b S	S W b S	S 32 W	4.0	16.2	11.8	9.40	9.77	...	Inap.
20	.629	.595	.586	.6026	29.1	32.4	28.8	29.92	+ 5.07	.141	.146	.137	.139	87	79	86	84	S W	Calm.	N b E	N 22 E	6.0	0.0	7.6	3.03	4.47	...	0.2
21	.463	.578	.858	.6533	27.7	25.9	14.0	21.38	— 3.40	.128	.078	.058	.084	84	56	68	71	N N E	N W b N	N N W	N 13 W	13.6	10.3	2.8	7.66	8.22	...	...
22	30.024	30.001	.740	.9123	6.0	23.0	29.5	20.07	— 4.70	.043	.098	.144	.099	75	79	87	81	N N W	S E	E b S	S 74 E	5.8	7.5	10.6	3.79	6.11	...	...
23	29.375	29.310	.403	.3628	33.4	38.1	30.9	34.45	+ 9.78	.163	.195	.149	.169	85	86	84	85	S	S W b S	W b S	S 49 W	13.0	14.5	25.0	16.58	17.66	Inap	0.2
24	.461	.517	.640	.5522	27.3	25.5	20.5	23.90	— 0.67	.126	.098	.074	.097	84	70	67	74	S W b W	W S W	S W b W	S 60 W	17.0	19.0	14.6	15.01	15.09	...	0.1
25	.693	.659	.626	.6593	17.9	24.1	19.7	20.27	— 4.30	.079	.093	.090	.088	80	72	84	81	W S W	S W b W	W S W	N 70 W	10.8	9.5	8.2	3.28	7.39	...	2.0
26	.700	.685	—	—	9.3	7.5	—	—	—	.062	.060	—	—	93	98	—	—	N N E	N N E	N	N 12 E	13.4	8.4	11.8	9.85	10.04	...	1.5
27	.641	.678	.710	.6840	—3.7	11.1	0.3	3.15	—21.20	.035	.055	.038	.043	93	74	85	83	N	Calm.	N	N	7.5	0.0	5.0	3.31	3.31	...	0.1
28	.694	.632	.638	.6588	6.7	19.7	10.7	11.55	—12.75	.052	.077	.059	.061	88	72	82	82	N	E b S	E N E	N 17 E	1.5	6.2	1.8	1.49	5.56	...	0.1
29	.683	.563	.629	.6000	5.3	20.1	12.9	13.43	—10.77	.052	.091	.069	.071	93	85	89	87	W b S	W b S	W b S	S 83 W	4.0	1.2	6.0	6.15	6.28	...	...
30	.690	.763	.886	.7955	7.5	18.3	12.2	12.60	—11.50	.054	.162	.065	.061	88	61	86	80	W	S W	S W b W	S 58 W	10.0	12.0	10.0	9.65	9.99	...	...
31	.958	30.001	30.127	30.0438	13.0	21.4	17.9	17.95	— 6.03	.072	.070	.072	.073	90	60	74	75	W S W	W b S	S W b W	S 69 W	12.6	17.0	11.2	11.64	12.23	...	0.1
M	29.5886	29.5744	29.6142	29.5959	16.33	22.61	18.46	19.02	— 5.78	.087	.098	.090	.092	85	76	82	82	.....	.....	.....	.....	9.74	9.40	9.04	...	8.90	Inap.	14.6

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JANUARY, 1868.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 30.145 at Midnight on 31st. } Monthly range—
Lowest Barometer . . . . . 28.975 at 10 p. m. on 1st. } 1.170.

Self-registering Ther.

Maximum temperature . . . . . 39°0 on 23rd. } Monthly range—
Minimum temperature . . . . . -7°0 on 12th. } 46°0

Mean maximum temperature . . . . . 24°10 } Mean daily range—
Mean minimum temperature . . . . . 11°85 } 12°25

Greatest daily range . . . . . 30°0 from a.m. to p.m. of 19th.
Least daily range . . . . . 2°9 from a.m. to p.m. of 24th.

Warmest day . . . . 23rd...Mean temperature . . . 34°45 } Difference—31°30.
Coldest day . . . . 27th...Mean temperature . . . 3°15 }

Maximum Solar . . . . . 87°0 on 30th } Monthly range—101°8
Radiation Terrestrial . . . . . -14°8 on 27th }

Aurora observed on 1 night, viz.: 21st.
Possible to see aurora on 10 nights; impossible on 21 nights.
Snowing on 21 days; depth, 14.6 inches; duration of fall, 114.0 hours.
Raining on 2 days; depth, inapp.; duration of fall, 2.5 hours.
Mean of cloudiness—0.77.
Most cloudy hour observed, 4 p.m.; mean, 0.84; least cloudy hour observed, 10 p.m. mean, 0.74.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South	East.	West.
1578.55	1927.76	1044.99	3077.86

Resultant direction, S. 83° W.; Resultant Velocity, 3.97.
Mean velocity, 8.90 miles per hour.
Maximum velocity, 26.5 miles, from noon to 1 p.m. of 9th.

Most windy day, 9th; mean velocity, 20.46 miles per hour } Difference, 17.15 miles.
Least windy day, 27th; mean velocity, 3.31 miles per hour }

Most windy hour, 8 a.m.; mean velocity, 9.58 miles per hour } Difference, 1.68 miles.
Least windy hour, 5 p.m.; mean velocity, 7.90 miles per hour }

7th. Lunar halo. 10th. Lunar halo. 14th. Lunar halo.
21st. Solar halo. 27th. Solar halo.

COMPARATIVE TABLE FOR JANUARY.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1840	17.0	— 6.1	36.7	—18.6	55.3	4	1.395	11	...	...	...	...
1841	25.6	+ 2.5	42.3	— 6.4	48.7	2	2.150	14	...	...	...	0.36 lbs
1842	27.9	+ 4.8	49.4	1.9	47.5	5	2.170	9	...	...	...	0.78
1843	28.7	+ 5.6	55.4	— 1.8	57.2	6	4.295	12	14.2	...	...	0.69
1844	20.2	— 2.9	45.3	— 7.2	52.5	7	3.005	11	24.9	...	...	0.70
1845	26.5	+ 3.4	45.7	— 0.2	45.9	5	Impr	9	22.7	...	...	0.70
1846	26.7	+ 3.6	44.0	— 1.3	45.3	5	2.335	10	6.0	...	...	0.55
1847	23.3	+ 0.2	42.4	2.7	39.7	7	2.185	5	7.5	...	...	1.09
1848	28.7	+ 5.6	51.1	—11.4	62.5	7	2.245	8	7.1	N 82 W	2.03	5.82 m.
1849	18.5	— 4.6	39.5	—14.2	53.7	4	1.175	10	9.2	N 63 W	3.06	6.71
1850	29.7	+ 6.6	46.4	9.9	36.5	5	1.250	8	5.2	N 37 W	0.69	5.80
1851	25.5	+ 2.4	43.4	—12.8	56.2	4	1.275	10	7.8	S 77 W	3.26	7.69
1852	18.4	— 4.7	37.3	—10.6	47.9	0	0.000	19	30.9	N 68 W	3.14	7.67
1853	23.0	— 0.1	40.9	— 9.7	50.6	1	0.290	6	7.5	N 27 W	2.52	6.84
1854	23.6	+ 0.5	46.4	— 5.4	51.8	7	1.270	11	7.5	N 77 W	2.44	6.91
1855	25.9	+ 2.8	49.0	— 5.4	54.4	5	0.525	13	23.3	N 73 W	1.91	7.26
1856	16.0	— 7.1	34.4	—12.0	46.4	0	0.000	14	13.6	N 75 W	5.24	10.69
1857	12.8	—10.3	37.2	—20.1	57.3	3	Inap	16	21.8	N 70 W	4.96	10.31
1858	30.0	+ 6.9	47.4	6.5	40.9	6	1.152	11	4.0	N 71 W	2.33	7.40
1859	26.4	+ 3.3	43.2	—26.5	69.7	6	1.449	19	16.4	S 81 W	3.17	8.76
1860	23.4	+ 0.3	46.4	— 6.8	53.2	6	0.740	16	8.7	N 89 W	6.09	9.37
1861	19.9	— 3.2	37.0	—11.2	48.2	4	0.685	23	20.6	N 86 W	2.92	9.30
1862	21.7	— 1.4	44.5	— 2.6	47.1	5	0.115	19	27.4	N 26 W	2.69	8.83
1863	28.1	+ 5.0	47.0	—14.0	61.0	10	1.122	17	20.6	N 61 W	1.13	7.23
1864	22.8	— 0.3	44.2	— 9.0	53.2	5	1.165	14	26.3	S 73 W	6.00	10.22
1865	17.7	— 5.4	37.2	— 9.0	46.2	1	0.440	18	14.8	N 85 W	4.80	9.19
1866	20.7	— 2.4	44.0	—14.0	58.0	4	0.522	19	10.3	N 75 W	2.98	9.54
1867	17.6	— 5.5	45.8	— 4.8	48.6	1	Inap.	21	42.0	N 55 W	3.27	6.96
1868	19.0	— 4.1	39.0	— 7.0	46.0	2	Inap.	21	14.6	S 83 W	3.97	8.90
Results to 1867.	23.08	.....	43.68	—7.64	51.27	4.46	1.219	13.3	16.01	N 77 W	3.02	8.10
Excess for 1868.	—4.08	.....	—4.68	+0.64	—5.27	2.28	1.219	7.7	1.41	...	...	+ 0.80

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—FEBRUARY, 1868

Latitude—43° 39′4 *North*. *Longitude*—5h. 17m. 33s. *West*. *Elevation above Lake Ontario*, 108 *feet*.

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Result.	Velocity of Wind.					Rain in inches.	Snow in inches.
	6. A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M	MR'N		6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'.	MR'N.		
	3				°	°	°	°	°																			
1	0.179	30.111	29.955	30.0733	14.0	24.8	20.1	18.96	— 4.93	.074	.085	.091	.083	90	64	85	81	s w	s w b w	s w	s 50 w	10.8	15.0	12.0	13.56	13.67	...	...
2	29.792	29.807	—	—	20.8	13.6	—	—	—	.103	.055	—	—	93	67	—	—	s w b w	n n w	n w b n	n 40 w	11.5	27.0	10.2	10.76	12.13	...	...
3	30.276	30.198	.912	30.1153	-9.8	7.8	13.6	4.13	—19.63	.027	.045	.067	.047	96	72	83	84	n n w	s w b s	s w b s	s 39 w	0.5	11.2	16.4	10.56	11.47	...	...
4	29.800	29.912	.967	29.8998	18.3	24.1	18.2	18.28	— 5.40	.080	.085	.060	.076	81	65	75	75	s w b w	w	Calm.	s 75 w	8.0	10.8	0.0	5.83	6.28	...	...
5	.813	.515	.288	.5117	21.2	28.8	30.9	27.38	+ 3.80	.099	.121	.149	.124	87	76	86	82	s	s	Calm.	s 10 w	5.8	7.8	0.0	5.89	6.42	...	0.4
6	.129	.273	.508	.3282	30.2	20.5	6.0	18.17	— 5.35	.157	.068	.043	.089	93	61	75	78	s w b w	w	w b n	n 78 w	4.2	26.0	14.2	16.59	17.44	...	0.5
7	.828	.937	30.033	.9560	0.6	9.3	-2.3	2.23	—21.20	.040	.044	.036	.039	88	67	90	81	n w b n	Calm.	Calm.	n 46 w	6.0	0.0	0.0	3.82	3.98	...	...
8	.988	.814	29.362	.6793	14.3	24.4	28.4	23.17	— 0.20	.071	.076	.148	.106	85	58	95	82	s w b s	s b w	s	s 8 w	6.4	11.2	11.5	11.76	12.61	...	4.0
9	.131	.169	—	—	33.8	29.5	—	—	—	.153	.113	—	—	93	69	—	—	s w b s	n w b w	n w b n	n 49 w	18.0	22.0	18.0	12.62	16.55	.040	...
10	.976	.975	.968	.9827	-6.6	3.5	-2.6	-1.47	—24.73	.026	.040	.033	.035	81	75	87	83	n n w	n n w	n n w	n 22 w	5.5	5.0	6.0	5.13	5.14	...	...
11	.914	.896	.945	.9270	-1.2	16.1	10.7	9.62	—13.55	.039	.062	.661	.068	94	68	87	84	Calm.	s w	w b s	s 67 w	0.0	8.8	3.8	7.60	8.18	...	inap.
12	.913	.968	.877	.9125	12.2	18.3	14.0	15.03	— 8.22	.065	.074	.068	.070	86	74	83	82	w s w	n	n	n 52 w	10.0	9.5	5.0	2.35	5.83	...	inap.
13	.606	.621	.907	.7305	26.2	25.5	14.0	20.58	— 2.67	.110	.098	.068	.091	77	70	83	81	s n	w n w	w n w	n 67 w	4.8	26.0	20.6	12.63	13.92	...	...
14	.999	.855	.585	.7905	-5.9	13.6	25.7	12.32	—10.96	.028	.061	.116	.075	85	76	83	84	Calm.	s s w	s s w	s 38 w	0.0	11.0	14.6	7.77	9.17	...	0.5
15	.494	.557	.811	.6377	28.8	32.4	20.1	26.67	+ 3.42	.151	.124	.079	.118	95	67	73	80	Calm.	n b w	n n w	n 25 w	0.0	9.8	14.0	8.46	8.65	...	1.5
16	.889	.852	—	—	14.7	26.2	—	—	—	.067	.103	—	—	78	73	—	—	n w b n	s b w	s	s 22 w	2.5	11.5	10.9	5.69	7.04	...	4.0
17	.814	.813	.804	.4963	32.0	32.7	15.0	25.15	+ 1.80	.173	.157	.063	.119	96	85	78	80	s w	n w b n	n w b n	n 40 w	10.0	31.0	22.2	16.46	18.70	...	1.0
18	.898	.690	.871	.6275	0.6	17.6	26.5	15.52	— 7.92	.040	.076	.098	.074	88	78	70	78	n n w	s s w	w s w	s 50 w	2.0	12.0	9.8	5.51	10.18	...	...
19	.369	.478	.580	.4858	32.0	36.3	25.6	31.93	+ 8.40	.151	.133	.098	.128	83	62	70	71	w	w b n	w s w	s 82 w	9.2	14.6	3.8	7.16	7.28	...	...
20	.467	.316	.293	.3478	22.6	41.7	35.3	32.12	+ 8.50	.111	.133	.148	.133	92	49	71	74	w s w	s s w	s w	s 75 w	0.8	7.6	6.2	4.59	6.93	...	...
21	.545	.735	.951	.7743	19.7	14.5	7.1	12.62	—11.12	.083	.056	.042	.058	78	67	70	72	n w b n	n b w	n	n 9 w	16.0	14.0	11.4	11.21	11.50	...	inap.
22	30.100	30.199	30.271	30.1998	-8.5	3.9	-2.6	-2.38	—26.20	.022	.040	.033	.032	75	76	84	78	n	n n w	n	n 5 w	11.6	8.0	12.5	8.70	8.88	...	...
23	30.376	30.390	—	—	-9.5	6.8	—	—	—	.023	.045	—	—	83	75	—	—	n b e	n e	e	n 73 e	9.0	11.0	16.7	10.36	12.36	...	1.0
24	30.197	30.075	30.024	30.0837	15.4	17.9	19.7	18.18	— 5.95	.077	.091	.099	.092	87	94	94	93	e	e b s	e b s	s 81 e	23.8	24.0	28.0	23.75	23.86	...	12.0
25	29.935	29.927	30.007	29.9603	21.9	23.7	18.3	21.30	— 3.03	.105	.125	.093	.108	89	99	94	94	e b s	e	e	n 79 e	24.5	20.4	13.4	16.21	16.94	...	6.0
26	.995	.916	29.744	.8642	19.7	24.4	24.1	22.80	— 1.73	.103	.117	.120	.115	97	89	93	94	n e b n	e n e	e n e	n 67 e	8.5	10.5	10.8	10.09	10.79	...	0.8
27	.430	.296	.296	.3338	27.7	27.0	24.4	26.42	+ 1.70	.142	.129	.117	.129	94	88	90	90	e	n w b n	w	n 88 w	6.5	9.0	10.8	5.22	7.25	...	1.0
28	.222	.248	.393	.3025	21.2	25.5	14.7	20.77	— 4.13	.105	.076	.067	.083	92	56	78	74	w b s	n w	w n w	n 61 w	10.0	15.0	6.2	13.21	13.79	...	...
29	.535	.536	.633	.5788	12.5	18.7	0.3	10.00	—15.02	.067	.082	.038	.059	88	81	85	82	n w b w	w b n	n b w	n 45 w	10.8	8.4	3.0	6.63	7.62	...	0.1
M	29.7548	29.7344	29.7894	29.7440	14.36	21.32	15.96	17.18	— 6.49	.086	.088	.081	.086	88	73	82	81	.....	.....	.....	.....	8.16	13.73	10.76	.....	10.84	.040	32.8

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR FEBRUARY, 1868.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M. and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer ..... 30 445 at 9 a.m. on 23rd } Monthly range=
Lowest Barometer ..... 29 129 at 6 a.m. on 6th } 1.316 inches.

Self-registering Ther.
- Maximum Temperature ..... 45°0 on 20th } Monthly range=
- Minimum Temperature ..... −11°5 on 23rd } 56°5.
- Mean Maximum Temperature ..... 26°57 } Mean daily range=
- Mean Minimum Temperature ..... 8°23 } 18°34
- Greatest daily range ..... 38°7 from a.m. to p.m. of 14th.
- Least daily range ..... 5°9 from a.m. to p.m. of 21st.

Warmest day.....20th...Mean Temperature.....32°12 } Difference=34°50
Coldest day .....22nd...Mean Temperature.....−2°38 }
Maximum Radiation. { Solar .....108°0 on 19th } Monthly range=
{ Terrestrial.....−20°2 on 3rd } 128°2

Aurora observed on 3 nights, viz.: 19th, 20th, 21st.
Possible to see Aurora on 15 nights: impossible on 14 nights.
Snowing on 16 days; depth 32.8 inches; duration of fall, 102.4 hours.
Raining on 1 day; depth 0.040 inches; duration of fall 3.0 hours.
Mean of Cloudiness=0.66.
Most cloudy hour observed 4 p.m.; Mean=0.72; least cloudy hour observed 10 p.m.; Mean=0.57

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
2634.24	1825.64	1503.61	3603.87

Resultant Direction N. 69° W.; Resultant Velocity 3.23.
Mean Velocity 10.84 miles per hour.
Maximum Velocity 34.5 miles, from 2.00 to 3.00 p.m. of 10th.

Most Windy day 23rd; Mean Velocity 23.80 miles per hour. } Difference 19.82 miles.
Least Windy day 7th; Mean Velocity 3 98 do
Most Windy hour 1 p.m.; Mean Velocity 13.54 do } Difference 5.47 miles.
Least Windy hour 5 a.m.; Mean Velocity 8 07 do

5th. Solar halo.
6th. Lunar halo. 7th. Lunar halo.
23rd. Solar halo.
24th and 25th. Furious storm of wind and snow.
28th. Lunar halo.

COMPARATIVE TABLE FOR FEBRUARY.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velo'y	Mean Velocity.
	°	°	°	°	°					°		
1840	28.0	+ 4.8	50.3	−10.5	60.8	8	1.475	6	...	...	...	...
1841	22.4	— 0.8	44.1	— 1.3	45.4	1	0.000	9	...	...	...	0.61 lbs
1842	26.9	+ 3.7	50.2	2.9	47.3	8	3.625	9	...	...	...	1.03
1843	14.5	— 8.7	38.5	— 9.4	47.9	1	0.475	21	14.4	...	...	1.05
1844	26.0	+ 2.8	47.9	0.6	47.3	4	0.430	7	10.0	...	...	0.43
1845	25.0	+ 2.8	49.1	— 4.2	53.3	5	imper.	9	19.0	...	...	0.99
1846	20.4	— 2.8	41.9	−16.7	58.6	0	0.000	13	46.1	...	...	0.65
1847	21.5	— 1.7	40.9	0.0	40.9	2	0.550	13	27.3	...	...	0.09
1848	26.6	— 3.4	46.6	0.0	46.6	4	0.775	8	10.8	N 65 W	2.53	5.69 m.
1849	19.5	— 3.7	40.6	— 9.8	50.4	2	0.240	13	19.2	N 41 W	1.48	6.58
1850	26.0	+ 2.8	49.6	2.2	47.4	7	1.235	9	23.1	N 80 W	3.43	7.61
1851	27.6	+ 4.4	50.2	2.0	48.2	7	2.600	4	2.4	N 64 W	1.99	6.94
1852	23.4	+ 0.2	41.2	— 6.2	47.4	3	0.650	11	13.0	S 75 W	3.34	6.42
1853	24.1	+ 0.9	43.4	— 1.4	44.8	4	1.030	15	12.6	N 49 W	2.51	7.30
1854	21.1	— 2.1	42.8	−10.8	53.6	5	1.460	15	18.0	N 7 E	1.73	6.91
1855	15.4	— 7.8	39.0	−25.4	64.4	2	1.770	14	21.8	N 40 W	4.34	8.17
1856	15.7	— 7.5	37.8	−18.7	56.5	0	0.000	8	9.7	N 81 W	7.70	10.71
1857	28.5	+ 5.3	52.4	— 5.9	58.3	11	3.050	11	11.7	S 78 W	3.68	9.82
1858	17.0	— 6.2	42.4	— 7.3	49.7	1	inapp.	16	26.7	N 72 W	3.22	9.12
1859	26.0	+ 2.8	46.2	2.1	44.1	6	0.455	14	8.8	N 54 W	2.72	8.50
1860	22.8	— 0.4	50.2	— 8.5	58.7	7	1.330	13	18.8	N 61 W	3.28	8.73
1861	26.1	+ 2.9	46.0	−20.8	66.8	4	0.815	17	29.7	N 77 W	3.86	10.58
1862	22.5	— 0.7	37.8	— 5.2	43.0	3	0.180	17	23.1	N 55 W	3.93	8.52
1863	22.4	— 0.8	41.5	−19.8	61.3	7	1.450	12	22.0	N 23 W	2.27	10.13
1864	24.3	+ 1.1	45.0	−15.0	60.0	2	0.397	14	9.5	S 84 W	6.48	10.11
1865	22.4	— 0.8	42.2	−10.0	52.2	5	0.810	11	16.8	N 23 W	3.95	8.23
1866	22.5	— 0.7	45.0	— 8.0	53.0	3	0.830	12	16.9	S 60 W	5.14	9.40
1867	28.9	+ 5.7	44.0	0.2	43.8	8	1.328	13	13.4	N 57 W	1.58	8.85
1868	17.2	— 6.0	45.0	−11.5	56.5	1	0.040	16	32.8	N 69 W	3.23	10.84
Results to 1867.	23.16	...	44.53	−7.32	51.85	4.29	0.999	11.93	17.77	N 69 W	3.09	8.42
Excess for 1868.	— 5.98	...	+ 0.47	— 4.18	4.65	3.29	.959	+ 4.07	+ 15.03	...	...	+ 2.42

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—MARCH, 1868.

Latitude—43° 39′4 *North. Longitude*—5h. 17m. 33s. *West. Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inch.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M	2 P.M.	10 PM	ME'N		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'.	M'N		
					°	°	°	°	°																			
1	29.610	29.489	—	—	-0.5	19.4	—	—	—	.036	.080	—	—	84	76	—	—	N	E N E	N E b E	N 53 E	9.0	11.4	13.9	11.82	12.36	...	1.5
2	.225	.220	29.501	29.3255	2.1	6.4	-3.7	1.23	—24.18	.045	.035	.029	.035	91	56	80	75	N E b E	N	N W b N	N 12 W	21.5	17.0	12.6	14.30	17.29	...	2.5
3	.616	.675	.774	.7078	-14.0	2.4	8.1	-2.33	—28.05	.021	.029	.044	.033	85	61	86	79	W N W	N W	N W	N 68 W	10.0	16.0	8.0	8.81	8.98	...	inap.
4	.888	.951	30.053	.9803	-2.3	22.6	8.2	9.75	—16.25	.036	.062	.040	.050	90	52	63	72	W b N	N W	N W	N 54 W	3.5	14.8	2.0	6.01	6.10	...	...
5	30.156	30.115	29.961	30.0760	2.8	26.6	28.0	20.03	— 6.17	.042	.119	.131	.098	83	82	86	83	N W	S E b S	E	S 75 E	1.0	7.0	9.8	5.21	6.12	inap.	...
6	29.675	29.577	.611	29.6150	33.4	36.0	36.3	35.55	+ 9.05	.181	.206	.210	.202	94	97	98	97	S E b S	S S W	S W b S	S 30 W	8.0	10.6	12.6	10.36	10.60	.540	...
7	.647	.586	.401	.5398	37.1	39.9	39.6	38.45	+11.63	.217	.246	.237	.229	98	100	97	98	S W b S	S b E	E b S	S 13 W	7.6	4.6	5.5	5.10	6.98	.770	...
8	.536	.798	—	—	39.6	42.1	—	—	—	.219	.223	—	—	90	83	—	—	S W b W	W b S	W	S 74 W	17.1	12.8	4.5	7.26	7.36	...	...
9	30.004	.998	.902	.9607	28.4	37.8	34.2	33.88	+ 6.37	.148	.165	.168	.159	95	72	85	82	Calm.	S W b W	S W b W	S 60 W	0.0	1.0	2.0	1.37	1.37	...	...
10	29.800	.781	.946	.8530	33.8	38.9	35.6	35.92	+ 8.10	.173	.185	.151	.169	89	78	73	80	Calm.	N b W	N W b W	N 41 W	0.0	1.0	7.4	4.55	4.84	...	...
11	30.190	30.250	30.186	30.1998	29.1	29.5	26.2	28.45	+ 0.22	.141	.105	.124	.124	87	65	87	79	N	E S E	E b N	N 76 E	8.0	13.0	6.5	8.08	9.25	...	...
12	29.881	29.871	29.836	29.5620	25.9	33.8	36.3	32.85	+ 4.30	.128	.182	.210	.180	91	93	98	95	E N E	E b N	E	N 80 E	11.0	8.4	0.6	4.82	6.07	.660	...
13	.266	.304	.410	.3343	38.5	45.7	37.4	40.23	+11.27	.229	.202	.196	.207	98	66	87	84	S W b W	W	W b S	S 77 W	6.4	14.0	3.2	5.64	5.74	...	...
14	.435	.350	.307	.3663	31.3	39.2	39.2	37.22	+ 7.90	.160	.199	.216	.197	90	83	90	88	W b S	E b N	E b N	N 76 E	1.0	14.0	4.5	5.16	6.02	.205	...
15	.371	.448	—	—	32.0	50.4	—	—	—	.166	.238	—	—	91	65	—	—	Calm.	S W b S	N E b N	N 59 E	0.0	4.6	3.8	0.82	3.28	...	...
16	.506	.434	.387	.4270	38.9	40.7	39.6	39.62	+ 9.58	.232	.250	.237	.237	98	98	97	97	E b N	E N E	E N E	N 72 E	12.0	4.8	3.0	6.82	6.97	.540	...
17	.136	.049	.330	.1733	43.5	52.9	47.1	47.38	+16.93	.278	.296	.250	.280	98	74	77	86	E	S S W	W S W	S 55 W	7.0	19.0	25.4	13.67	15.51	.045	...
18	.571	.819	.962	.8045	32.4	30.9	28.4	30.38	— 0.47	.146	.096	.119	.117	79	55	76	69	W b S	N W b W	N W b W	N 73 W	24.2	31.5	4.0	12.41	12.69	...	0.1
19	.950	.834	.675	.8125	28.3	32.4	32.7	30.38	— 0.88	.110	.124	.120	.127	87	67	65	75	N W b W	E b N	E N E	N 79 E	1.0	8.8	9.0	7.42	8.15	...	0.1
20	.568	.600	.611	.5928	33.4	35.6	33.1	33.97	+ 2.25	.163	.109	.167	.151	85	51	88	77	N E b E	Calm.	N N W	N 33 W	1.2	0.0	17.6	14.37	14.52	...	...
21	.553	.521	.603	.5538	21.9	26.2	24.4	24.00	— 8.08	.084	.089	.089	.086	71	62	68	66	N N W	N N W	N N W	N 27 W	30.0	30.4	27.8	28.58	28.63	...	...
22	.704	.703	—	—	17.2	36.3	—	—	—	.075	.085	—	—	78	38	—	—	N N W	N W b W	S W	W	22.5	11.2	6.5	5.53	10.88	...	...
23	.492	.412	.432	.4472	32.4	47.9	38.8	39.93	+ 7.15	.160	.129	.170	.154	87	38	71	64	S W	S W b S	N N W	N 35 W	10.5	2.5	12.8	4.41	8.71	...	...
24	.610	.766	.832	.7505	32.0	35.2	28.4	31.95	— 1.22	.158	.077	.119	.113	87	36	76	63	N	E S E	E	N 80 E	13.0	11.8	4.0	6.60	7.63	...	...
25	.834	.834	.903	.8560	24.8	36.8	32.4	32.23	— 1.33	.112	.101	.101	.111	84	46	55	62	N E b E	E	N E	N 73 E	9.6	11.6	7.6	9.39	9.84	...	...
26	.975	.950	.840	.9037	25.9	34.2	26.2	29.73	— 4.25	.120	.087	.090	.103	86	44	62	64	N E	E S E	S	S 62 E	7.0	8.0	2.0	2.17	4.98	...	...
27	.692	.538	.505	.5665	24.1	42.8	39.6	35.80	+ 1.38	.107	.093	.084	.094	82	32	34	46	W b N	S	N b W	N 37 W	1.4	4.4	11.0	1.81	4.61	...	...
28	.562	.618	.750	.6507	33.8	48.9	39.2	41.32	+ 6.60	.115	.116	.120	.118	58	33	49	46	N b E	E S E	N b E	N 62 E	4.0	7.0	4.6	3.18	4.94	...	...
29	.860	.915	—	—	34.9	45.4	—	—	—	.143	.162	—	—	71	52	—	—	N b E	E S E	E b S	S 77 E	4.8	7.0	3.7	4.05	4.22	...	...
30	.853	.698	.707	.7458	28.4	56.5	46.4	44.32	+ 8.82	.098	.158	.122	.134	62	34	38	46	Calm.	S S W	N W b W	S 88 W	0.0	14.0	10.0	4.12	8.10	...	...
31	.694	.645	.491	.5902	35.2	50.4	34.2	41.52	+ 5.60	.128	.133	.125	.131	62	34	63	51	N	S E	Calm.	S 76 E	1.0	4.8	0.0	2.05	3.33	...	...
M	29.6838	29.6575	29.6698	29.6690	26.00	35.76	31.19	31.30	+ 0.92	.136	.138	.141	.140	85	62	75	74	.....	.....	.....	.....	8.16	10.87	7.93	...	8.58	2.660	4.2

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR MARCH, 1868.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....30.274 at noon on 11th } Monthly range=
Lowest Barometer.....29.049 at 2 p.m. on 17th } 1.225 inches.

Self-regist'g Thermom.
- Maximum Temperature .....59°0 on 30th } Monthly range=
- Minimum Temperature..... -15°6 on 3rd } 74°.6
- Mean Maximum Temperature .....39°10 } Mean daily range=
- Mean Minimum Temperature .....23°92 } 15°.18
- Greatest daily range.....34°6 from a.m. to p.m. of 5th.
- Least daily range .....4°3 from a m. to noon of 11th.

Warmest Day.....17th...Mean Temperature.....47°38 }
Coldest Day.....3rd...Mean Temperature.....-2°33 } Difference=49°71
Maximum Radiation. { Solar .....100°8 on 31st } Monthly range=
{ Terrestrial..... -25°5 on 3rd } 126°3

Aurora observed on 10 nights, viz.:—18th, 19th, 20th, 21st, 23rd, 24th, 25th, 26th, 30th and 31st.
Possible to see Aurora on 18 nights; impossible on 13 nights.
Snowing on 5 days; depth 4.2 inches; duration of fall 16.0 hours.
Raining on 7 days; depth 2.660 inches; duration of fall 54.0 hours.
Mean of Cloudiness—0.58.
Most cloudy hour observed 4 p.m.; Mean, 0.65; least cloudy hour, 6 a.m.; Mean, 0.53.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
2612.59	1133.94	1958 9	2517.14

Resultant Direction N. 21° W.; Resultant Velocity 2.12.
Mean Velocity 8.58 miles per hour.
Maximum Velocity 36.5 miles, from 7 to 8 a.m. of 21st.
Most Windy day 21st; Mean Velocity 28 63 miles per hour. } Difference 27.26 miles.
Least Windy day 9th; Mean Velocity 1.37 miles per hour.
Most Windy hour, Noon; Mean Velocity 11.22 miles per hour. } Difference 4.58 miles.
Least Windy hour 6 p.m.; Mean Velocity 6.64 miles per hour.

7th March. Dense fog. 9th. Solar halo. 11th. Lunar halo. 13th. Dense fog. 17th. Perfect rainbow. 27th. Solar halo.
16th. Thunder storm during morning, accompanied by a shower of hail, and, for a few minutes, by a most furious gust of wind, causing a considerable amount of damage to the more exposed and temporary buildings in the southern portion of the city.
21st. Very stormy day, high keen wind.
14th. Robins seen. 17th. Blue birds seen.

COMPARATIVE TABLE FOR MARCH.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velo'y.	Mean Velocity
	°	°	°	°	°					°		
1840	33.3	+ 3.5	58.6	9.2	49.4	8	1.640	8	...		...	...
1841	27.7	— 2.1	54.6	-6.7	61.3	5	1.170	7	...	...	...	0.51 lbs
1842	35.8	+ 6.0	70.3	15.1	55.2	4	3.150	8	...	...	...	0.70
1843	21.3	— 8.5	39.9	-2.5	42.4	2	0.620	18	25.7	...	...	1.18
1844	31.3	+ 1.5	50.8	9.6	41.2	8	2.470	8	14.0	...	...	0.57
1845	35.4	+ 5.6	62.7	6.6	56.1	5	insp	8	2.8	...	...	0.66
1846	33.1	+ 3.3	49.6	8.3	41.3	9	1.905	5	2.3	...	...	0.30
1847	26.2	— 3.6	43.9	5.6	38.3	5	0.850	6	4.2	...	...	0.71
1848	28.6	— 1.2	58.6	0.0	58.6	5	1.220	6	9.7	N 66 W	2.03	5.80mls
1849	33.5	+ 3.7	53.0	15.1	37.9	7	1.525	2	2.3	N 3 W	1.48	5.37
1850	29.8	0.0	46.5	7.2	39.3	2	0.745	7	11.2	N 52 W	2.62	7.62
1851	32.4	+ 2.6	59.3	12.0	47.3	3	0.770	9	8.8	N 21 W	1.93	7.65
1852	27.7	— 2.1	44.8	-7.4	52.2	8	3.080	12	19.5	N 8 W	0.71	5.81
1853	30.6	+ 0.8	56.3	0.0	56.3	6	1.080	8	7.1	N 58 W	2.60	5.96
1854	30.7	+ 0.9	55.1	7.4	47.7	9	2.425	3	2.8	N 53 W	3.39	8.03
1855	28.5	— 1.3	49.4	-2.9	52.3	5	1.485	11	18.1	N 88 W	4.76	9.95
1856	23.1	— 6.7	41.4	-14.0	55.4	0	0.000	12	16.2	N 71 W	7.68	11.39
1857	27.8	— 2.0	57.6	-5.5	63.1	4	0.335	15	11.3	N 63 W	6.63	10.84
1858	28.4	— 1.4	55.4	-5.5	60.9	10	0.917	6	0.2	N 58 W	5.45	8.56
1859	36.3	+ 6.5	54.2	9.8	44.4	15	4.054	8	1.0	N 64 W	1.96	10.39
1860	34.5	+ 4.7	67.0	12.8	54.2	5	0.882	11	2.4	N 64 W	7.61	12.41
1861	26.9	— 2.9	47.4	-5.2	52.6	8	2.125	14	7.1	N 54 W	4.33	10.56
1862	28.8	— 1.0	43.2	8.0	35.2	8	2.560	11	18.5	N 12 W	2.50	9.38
1863	25.8	— 4.0	42.2	-4.0	46.2	4	0.687	17	11.4	N 27 W	2.62	9.27
1864	29.1	— 0.7	50.2	3.0	47.2	9	1.620	12	3.7	N 53 W	2.29	8.41
1865	33.6	+ 3.8	55.6	-3.5	59.1	10	3.050	12	18.9	N 61 W	2.16	8.80
1866	27.6	— 2.2	45.8	7.5	38.3	8	1.915	18	7.2	N 73 W	6.84	11.51
1867	26.6	— 3.2	46.8	3.0	43.8	6	0.617	14	33.4	N 34 W	2.12	8.52
1868	31.3	+ 1.5	59.0	-15.6	74.6	7	2.660	5	4.2	N 21 W	2.12	8.58
Res'ts to 1867.	29.80	...	52.15	2.96	49.19	6.36	1.591	9.86	10.39	N 58 W	3.38	8.81
Excess for '68	+ 1.50	...	+ 6.85	+ 18.56	+ 25.41	+ 0.64	+ 1.069	— 4.86	— 6.19	...	...	— 0.23

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—APRIL, 1868.

Latitude—43° 39′4 *North.* *Longitude*—5*h.* 17*m.* 33*s. West.* *Elevation above Lake Ontario*, 108 *feet*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in inches.	Snow in inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 PM	MR'N.		6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN		
					°	°	°	°	°												°							
1	29.388	29.297	29.369	29.3263	32.7	61.9	43.2	46.85	+10.62	.157	.179	.209	.202	84	32	74	65	Calm	N W b W	N N W	N 34 W	0.0	19.0	19.0	7.76	9.03	...	...
2	.340	.397	.566	.4453	38.9	37.8	26.6	32.62	— 4.02	.144	.122	.098	.124	68	53	68	67	N b W	N W b N	W b N	N 41 W	6.0	15.2	3.0	8.89	9.30	...	0.2
3	.548	.421	.341	.4153	25.5	37.4	31.8	31.88	— 5.13	.098	.111	.129	.114	70	48	73	64	Calm	S E b E	W b N	S 51 W	0.0	7.0	6.2	3.08	5.10	...	0.2
4	.377	.237	.378	.3838	27.0	29.8	21.5	25.80	—11.53	.107	.133	.095	.108	73	80	82	77	W	S	N W	N 59 W	6.8	5.2	24.0	7.36	10.18	...	2.0
5	.573	.624	—	—	11.8	24.1	—	—	—	.052	.078	—	—	69	60	—	—	N W b W	W	W	N 82 W	3.8	19.6	3.8	8.68	8.92	...	0.1
6	.751	.652	.598	.6500	16.5	36.7	32.4	29.67	— 8.37	.076	.088	.116	.101	83	40	62	63	Calm	W b S	W b S	S 48 W	0.0	15.0	3.8	6.32	7.25	...	0.1
7	.388	.220	.121	.2230	30.6	34.5	28.4	31.00	— 7.42	.160	.174	.134	.152	93	86	86	87	E S E	N E	W b N	N 38 W	2.0	1.0	5.0	2.39	5.42	...	0.5
8	.146	.294	.741	.4290	22.6	28.0	19.4	22.95	—15.77	.104	.062	.068	.080	86	38	65	65	Calm	W N W	W	N 68 W	0.0	35.5	7.6	17.49	17.77	...	0.2
9	.966	.988	.900	.9490	17.9	29.8	24.1	24.85	—14.18	.072	.081	.085	.082	74	49	65	62	W b N	S b W	S E b E	S 61 E	7.0	6.8	2.5	2.66	8.48	...	...
10	.713	.660	—	—	28.0	33.1	—	—	—	.117	.153	—	—	76	81	—	—	E b N	E N E	E N E	N 86 E	12.4	9.0	2.3	5.40	6.45	...	...
11	.551	.346	.207	.3598	27.0	42.5	36.3	35.78	— 3.96	.129	.165	.210	.175	88	59	98	83	S	S S W	S W	S 79 W	1.4	18.0	3.6	5.98	13.46	0.225	...
12	.646	.757	—	—	21.9	30.2	—	—	—	.090	.063	—	—	77	37	—	—	N	N W b N	N b W	N 11 W	22.6	10.2	8.9	11.40	11.64	...	...
13	.987	30.004	.986	.9990	21.9	35.6	27.7	29.90	—10.58	.106	.079	.106	.106	89	36	70	66	N b W	S b E	S S E	S 27 E	2.3	9.5	3.6	4.82	5.60	...	...
14	.818	29.539	.445	.5855	32.7	39.0	38.9	37.33	— 3.40	.150	.150	.228	.181	80	62	96	80	E	E b N	S E b E	S 89 E	8.0	13.0	2.8	6.91	7.11	.025	...
15	.322	.052	.054	.1213	41.0	63.0	46.4	50.57	+ 9.52	.237	.318	.259	.274	92	54	82	75	E N E	E	S S W	S 45 E	6.5	12.2	2.6	5.49	8.35	.105	...
16	28.902	.134	.238	.1202	43.5	54.7	46.8	49.25	+ 7.77	.259	.222	.253	.255	92	51	79	74	S	S W	S W	S 39 W	11.5	22.4	7.6	15.27	15.31	...	...
17	29.286	.293	.511	.3755	42.1	49.7	37.8	43.55	+ 1.80	.223	.208	.165	.200	83	57	72	70	S W	W S W	W	S 73 W	13.5	23.5	15.6	17.10	18.42	.005	inap.
18	.723	.819	.897	.8243	34.2	45.7	36.3	39.02	— 3.05	.131	.096	.157	.124	66	31	74	55	W b N	W	W S W	N 37 W	13.0	21.0	6.4	10.90	10.99	...	...
19	.938	.852	—	—	35.6	51.5	—	—	—	.167	.221	—	—	80	57	—	—	Calm	S S W	S S W	S 24 W	0.0	7.6	0.6	3.65	4.13	.020	...
20	.768	.671	.664	.7007	38.9	47.9	37.8	40.80	— 1.93	.228	.230	.190	.209	96	69	84	82	E b S	...	...	...	4.6	8.0	1.0	...	3.97	...	...
21	.682	.597	.667	.6592	33.4	57.3	48.9	46.83	+ 3.78	.163	.239	.161	.190	85	50	46	59	Calm	S b W	N W b N	...	0.0	15.0	14.2	...	9.94	...	...
22	.888	.917	.806	.8578	36.3	48.5	35.6	38.30	— 5.07	.123	.142	.186	.148	56	50	89	64	N N W	N N E	N N E	N	10.6	11.8	10.2	9.58	10.37	...	1.5
23	.774	.989	30.048	.9538	32.7	40.7	29.3	34.80	— 8.90	.180	.136	.138	.146	97	53	86	75	N b W	N b W	N W b N	N 14 W	10.6	13.5	3.6	8.57	9.05	...	0.5
24	30.082	30.000	29.891	.9832	32.0	49.0	38.1	41.05	— 2.95	.135	.095	.161	.132	74	27	69	54	N W b N	S b E	S	S 7 E	2.5	4.2	0.8	2.47	3.16	...	...
25	29.856	29.892	.899	.8900	38.1	45.3	39.6	41.42	— 2.98	.187	.217	.210	.204	81	71	87	78	S	E b S	E	N 79 E	3.2	9.8	3.3	4.79	6.48	...	...
26	.936	.915	—	—	36.3	55.1	—	—	—	.176	.205	—	—	82	47	—	—	N W b N	S S E	S E b S	N 55 W	9.0	6.8	1.5	2.41	6.80	...	...
27	.776	.723	.814	.7747	39.6	42.8	36.7	39.33	— 5.68	.184	.168	.171	.171	75	61	78	71	N E	E	E N E	N 78 E	10.7	15.4	8.0	9.17	9.37	...	...
28	.854	.872	.833	.8550	34.2	43.5	44.3	41.33	— 4.02	.168	.194	.239	.211	85	68	82	80	N E	E b S	E N E	N 76 E	3.7	11.0	8.2	10.88	11.23	...	...
29	.647	.488	.304	.4572	43.2	46.4	46.4	46.05	+ 0.32	.190	.310	.301	.277	68	98	95	88	E N E	E N E	N E b E	N 71 E	15.4	9.5	4.4	6.05	8.38	.510	...
30	.212	.298	.606	.3902	50.8	58.0	39.9	49.92	+ 3.87	.272	.327	.206	.275	73	67	84	75	S W	W	N W	N 66 W	7.6	26.0	14.0	11.92	15.42	inap.	...
M	29.6015	29.5656	29.5058	29.5872	33.33	44.02	35.75	38.04	— 2.95	.159	.170	.171	.170	80	56	78	71	.....	.....	.....	.....	6.49	13.39	6.60	.....	9.24	0.990	5.3

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 30.097 at 8 a.m. on 24th.
Lowest Barometer . . . . . 28.962 at 6 a.m. on 16th. } Monthly range= 1.135 inches.

Self-registering Ther.

Maximum temperature . . . . 64°0 on 15th
Minimum temperature . . . . 9°2 on 5th } Monthly range=54°8

Mean maximum temperature . . 46°13
Mean minimum temperature . . 29°74 } Mean daily range=16°38

Greatest daily range . . . . . 31°1 from a.m. to p.m. of 1st.
Least daily range . . . . . 6°0 from a.m. to p.m. of 27th.

Warmest day . . . 15th...Mean temperature . . . 50°57
Coldest day . . . . 8th...Mean temperature . . . 22°95 } Difference=27°62.

Maximum { Solar . . . . . 116°0 on 1st
Radiation { Terrestrial. . . . . -2°5 on 5th } Monthly range=118°5

Aurora observed on 6 nights, viz.:—
Possible to see Aurora on 20 nights; impossible on 10 nights.
Snowing on 10 days; depth, 5.3 inches; duration of fall, 32.9 hours.
Raining on 7 days; depth, 0.990 inches; duration of fall, 21.2 hours.
Mean of cloudiness=0.62. Most cloudy hour observed, 4 p.m.; mean, 0.75; least do., do., 10 p.m.; mean, 0.51.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
2096.61	1350.84	1477.0	2930.78

Resultant direction, N. 63° W.; resultant velocity, 2.43.
Mean velocity, 9.24 miles per hour.
Maximum velocity, 38.0 miles, from 2 to 3 p.m. of 8th.

Most windy day, 17th; mean velocity, 18 42 miles per hour.
Least windy day, 24th; mean velocity, 3.16 miles per hour. } Difference, 15.26 miles.

Most windy hour, noon; mean velocity, 13 39 miles per hour.
Least windy hour, 4 a.m.; mean velocity, 5.96 miles per hour. } Difference 7.43 miles.

4th. Solar halo, a.m. 6th. Solar halo. 9th. Solar halo, Lunar halo.
15th. Solar halo. 18th. Fine parhelia and secondary circle the colors of which were intensely bright at 6.30 a.m.
24th. Solar halo. 26th. Solar halo. 27th. Solar halo.
Immense flock of pigeons about the middle of month.
6th. First steamer sailed. 15th. Frogs croaking. 30th. Swallows appearing.

COMPARATIVE TABLE FOR APRIL.

YEAR	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	V'locity.	Mean Velocity.
	°		°	°	°					°		
1840	42.4	+ 1.3	68.7	22.8	45.9	14	3.420	2	...	...	...	...
1841	39.2	— 1.9	64.8	19.9	44.9	3	1.370	3	...	...	...	0.51 lbs.
1842	43.7	+ 2.6	69.8	20.1	69.7	8	3.740	2	...	...	...	0.57
1843	40.9	— 0.2	71.6	14.7	56.9	7	3.185	3	0.1	...	...	0.46
1844	47.5	+ 6.4	74.6	14.9	59.7	10	1.515	1	Inp.	...	...	0.24
1845	42.1	+ 1.0	66.7	15.5	51.2	11	3.290	4	1.5	...	...	1.00
1846	44.0	+ 2.9	81.8	24.2	57.6	10	1.300	2	1.3	...	...	0.55
1847	39.2	+ 8.1	65.1	9.3	55.8	8	2.870	2	4.0	...	...	0.59
1848	41.3	+ 0.2	65.1	22.7	42.4	5	1.465	1	0.5	N 77 W	1.46	4.89 miles.
1849	39.0	— 2.1	72.0	15.5	56.5	10	2.655	2	1.7	N 43 W	3.14	7.50
1850	37.9	— 3.2	65.7	18.0	47.7	7	4.720	2	1.1	N 39 W	1.12	7.64
1851	41.3	+ 0.2	59.8	25.8	33.5	11	2.295	3	1.2	N 14 E	2.52	8.07
1852	38.2	— 2.9	53.8	20.0	33.8	6	1.990	4	9.4	N 23 E	2.44	6.68
1853	41.9	+ 0.8	65.7	25.0	40.7	10	2.625	1	1.0	N 12 W	1.95	5.20
1854	41.0	— 0.1	64.5	20.2	44.3	12	2.685	4	2.7	N 50 E	2.57	6.81
1855	42.4	+ 1.3	69.4	10.7	58.7	8	2.030	3	1.6	N 36 W	3.99	7.57
1856	42.3	+ 1.2	72.2	14.2	58.0	13	2.780	3	0.1	N 29 E	1.64	8.05
1857	35.4	— 5.7	52.0	5.9	46.1	10	1.755	11	12.9	N 60 W	4.15	10.24
1858	41.5	+ 0.4	65.2	21.8	43.4	13	1.642	2	0.1	N 14 W	1.64	9.57
1859	39.5	— 1.6	64.8	22.6	42.2	9	2.527	8	1.2	N 36 W	2.33	10.79
1860	39.5	— 1.6	61.8	19.5	42.3	11	1.282	5	0.3	N 37 W	4.10	10.30
1861	42.0	+ 0.9	67.0	23.8	43.2	12	1.619	4	6.9	N 37 E	2.31	8.90
1862	39.6	— 1.5	68.0	14.5	53.5	10	2.235	4	0.2	N 50 E	2.48	9.77
1863	42.0	+ 0.9	69.0	8.6	60.4	8	2.210	4	1.6	N 14 E	3.75	9.20
1864	40.9	— 0.2	59.4	28.1	31.1	16	3.633	8	3.5	N 41 E	3.39	7.77
1865	43.1	+ 2.0	62.5	23.0	39.5	17	3.972	6	2.0	N 84 W	2.11	8.39
1866	43.9	+ 2.8	71.0	28.5	42.5	7	1.675	2	Inp	N 42 W	3.84	7.95
1867	39.5	— 1.6	65.5	25.4	40.1	12	2.147	5	7.2	N 51 W	2.68	7.89
1868	38.0	— 3.1	64.0	9.2	54.8	7	0.990	10	5.3	N 63 W	2.43	9.24
Results to 1867.	41.09	.....	67.03	19.11	47.92	9.92	2.451	3.48	2.48	N 15 W	2.03	8.06
Exc. for 1868.	—3.05	.....	—3.03	—9.91	+6.88	2.92	1.461	6.57	2.82	...	...	1.18

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—MAY, 1868.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17m. 33s. *West.* *Elevation above Lake Ontario, 108 feet.*

Day.	Barom. at temp. of 32°. 6 A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Excess of Mean above Normal.	Tension of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N.	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Direction of Wind. 6 A.M.	2 P.M.	10 P.M	Resultant.	Velocity of Wind. 6 A.M.	2 P.M.	10 P.M.	Resultant.	MEAN	Rain in inches.	Snow in inches.
1	29.758	29.800	29.686	29.7487	38.1	53.6	34.5	37.77	— 8.65	.204	.184	.174	.187	88	75	87	82	N b E	S E b S	E N E	S 86 E	6.4	10.0	5.2	4.79	6.65	0.380	...
2	.564	.590	.616	.5897	36.3	46.4	45.2	42.28	— 4.43	.193	.230	.244	.219	90	73	87	81	N E	E	Calm.	N 64 W	10.0	11.0	0.0	6.26	7.55	.010	...
3	.675	.661	—	—	41.0	54.7	—	—	—	.218	.283	—	—	85	66	—	—	N N W	S	S b E	S 45 E	4.5	5.0	3.9	1.74	4.13	...	...
4	.611	.540	.415	.5133	45.7	58.0	48.2	50.52	+ 3.10	.259	.337	.236	.269	84	70	69	73	N E b E	E	E	N 86 E	6.0	4.0	0.6	3.71	4.32	.690	...
5	.255	.213	.322	.2732	49.7	60.9	51.5	52.70	+ 4.97	.338	.390	.304	.329	95	72	80	82	S E	E S E	N N W	N 32 W	2.0	8.0	21.5	4.28	9.53	1.410	...
6	.443	.487	.486	.4662	43.5	51.1	45.7	46.72	— 1.32	.223	.209	.202	.208	78	54	66	65	N W	N	N E	N 16 W	15.0	15.2	0.2	8.88	9.92	...	...
7	.383	.354	.371	.3657	43.2	43.5	41.7	43.62	— 4.80	.235	.194	.218	.229	84	68	82	80	E N E	E	Calm.	N 71 E	10.6	7.6	0.0	3.89	5.67	...	...
8	.406	.409	.561	.4465	42.5	53.6	39.9	46.23	— 2.58	.173	.184	.181	.189	63	44	73	61	N N W	N W	Calm.	N 86 W	12.2	15.2	0.0	10.63	10.71	...	...
9	.520	.505	.593	.5462	38.8	57.3	43.9	47.75	— 1.42	.160	.188	.112	.144	68	40	38	45	N W b N	S b W	N N W	N 29 W	3.4	4.2	9.0	8.08	9.73	...	...
10	.700	.762	—	—	42.8	52.6	—	—	—	.223	.217	—	—	81	54	—	—	N b W	S S E	S	S 42 E	8.0	7.2	1.5	1.22	5.45	...	...
11	.868	.888	.876	.8798	44.6	60.0	44.6	46.77	— 3.10	.217	.212	.162	.196	74	59	54	61	Calm.	E S E	N E b E	N 88 E	0.0	8.8	5.7	5.33	6.58	...	...
12	.830	.729	.614	.7117	46.4	54.7	51.1	50.57	+ 0.40	.184	.189	.198	.196	58	43	52	53	E N E	E b E	E b N	N 80 E	12.0	17.5	13.0	13.58	13.64	...	...
13	.585	.513	.362	.4669	44.6	45.4	50.0	46.53	— 4.03	.235	.263	.346	.284	80	56	96	89	E	E N E	N E	N 62 E	17.2	21.2	19.5	17.76	18.19	2.220	...
14	.241	.190	.310	.2667	53.3	61.0	52.6	52.95	+ 2.33	.360	.436	.553	.364	90	81	89	90	N E b E	N E b E	N	N 59 E	12.4	15.6	3.0	5.78	8.53	.620	...
15	.575	.567	.500	.5387	47.9	54.7	54.4	53.23	+ 1.65	.311	.353	.361	.355	93	84	86	87	N E b E	E b S	E N E	N 79 E	4.5	7.8	3.2	2.99	3.27	.760	...
16	.490	.493	—	—	45.4	59.1	—	—	—	.297	.402	—	—	98	80	—	—	E S E	S S E	N	N 15 E	8.0	1.6	15.8	6.66	7.31	.620	...
17	.585	.590	.653	.6175	45.0	58.3	49.3	50.87	— 1.42	.211	.155	.174	.169	70	32	49	48	N b E	N b E	N b W	N 4 E	9.5	13.4	4.0	8.87	9.18	...	...
18	.735	.739	.746	.7370	47.1	54.0	48.6	51.15	— 1.47	.194	.241	.261	.240	59	57	76	64	N b E	S b W	E	S 48 E	4.0	7.0	5.0	1.58	3.62	...	...
19	.744	.759	.703	.7312	49.7	51.6	51.1	50.45	+ 2.57	.207	.290	.289	.262	57	75	76	71	E N E	E b S	Calm.	N 70 E	2.0	7.0	0.0	3.48	4.86	...	...
20	.617	.541	.397	.5052	52.9	59.4	54.0	55.57	+ 2.25	.274	.363	.379	.342	69	71	91	78	N	N b W	N W b W	N 24 W	4.8	1.4	17.2	7.89	8.44	.270	...
21	.302	.412	.493	.4143	54.0	58.7	52.6	55.33	+ 1.63	.390	.396	.364	.373	93	86	92	85	N N W	Calm.	E	N 89 E	1.6	0.0	1.0	2.15	2.58	.150	...
22	.520	.546	.531	.5315	49.7	57.3	54.0	54.42	+ 0.45	.338	.380	.367	.370	94	80	88	87	E b S	E b S	N E b N	N 74 E	4.2	6.0	4.6	3.41	4.09	Inap.	...
23	.497	.458	—	—	56.5	60.9	—	—	—	.390	.426	—	—	85	79	—	—	N	S W b S	S W	N 9 W	7.5	5.5	1.0	0.75	3.19	.405	...
24	.574	.594	.609	.5942	57.2	67.0	57.6	61.77	+ 7.08	.381	.447	.331	.395	81	67	69	71	N b W	S b W	Calm.	S 32 W	1.8	6.6	0.0	0.75	2.73	...	...
25	.634	.596	.476	.5562	55.5	71.0	57.8	62.03	+ 7.05	.392	.420	.390	.412	89	55	83	75	S E	S E b E	N E b E	N 79 E	0.5	3.5	4.5	2.78	3.44	...	...
26	.413	.313	.292	.3350	60.9	71.0	57.3	62.63	+ 7.35	.402	.515	.414	.451	74	67	88	79	N E	N E	N E	N 73 E	4.2	5.2	6.2	5.11	5.46	.010	...
27	.331	.372	.409	.3673	58.0	60.9	60.1	60.13	+ 4.48	.452	.441	.447	.447	94	82	86	86	N E	S E	E b N	N 83 E	3.4	8.8	3.2	2.37	2.87	.090	...
28	.373	.339	.309	.3385	61.2	67.6	53.6	56.95	+ 1.00	.512	.446	.373	.429	95	94	91	92	N E	E b N	E N E	N 81 E	3.6	8.8	0.5	4.18	4.76	...	...
29	.368	.472	.588	.4850	59.0	59.8	53.6	57.30	+ 1.05	.451	.381	.308	.370	90	74	74	78	S W b W	W	N W b W	N 80 W	6.0	17.5	11.0	11.65	12.07	...	...
30	.676	.707	—	—	49.0	59.4	—	—	—	.253	.375	—	—	73	74	—	—	W b N	S b W	N	N 60 W	10.6	5.0	3.6	5.46	7.58	Inap.	...
31																												
M	29.5248	29.5220	29.5168	29.5206	49.07	55.98	50.06	51.82	+ 0.34	.294	.315	.290	.299	81	68	77	75	.....	.....	.....	.....	6.49	8.48	5.54	...	6.87	7.670	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR MAY, 1868.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 29.907 at 8 a. m. on 11th.
Lowest Barometer . . . . . 29,190 at 2 p. m. on 14th. } Monthly range—0.717.

Self-registering Ther.

Maximum temperature . . . . . 78°0 on 26th and 27th.
Minimum temperature . . . . . 33°2 on 1st. } Monthly range—39°8

Mean maximum temperature . . . . . 59°72
Mean minimum temperature . . . . . 44°47 } Mean daily range—15°25

Greatest daily range . . . . . 25°4 from a.m. to p.m. of 9th.
Least daily range . . . . . 6°6 from a.m. to p.m. of 22nd.

Warmest day . . . . 27th...Mean temperature . . . 62°63
Coldest day . . . . 1st ...Mean temperature . . . 37°77 } Difference—24°86.

Maximum { Solar . . . . . 111°0 on 5th
Radiation { Terrestrial . . . . . -25°5 on 11th } Monthly range—77°8

Aurora observed on 5 nights, viz.: 9th, 11th, 20th, 23rd, and 26th.
Possible to see aurora on 17 nights; impossible on 14 nights.
Snowing on days; depth, inches; duration of fall, hours.
Raining on 16 days; depth, 7.670 inches; duration of fall, 98.1 hours.
Mean of cloudiness—0.67.
Most cloudy hour observed, 2 p.m.; mean, 0.74; least cloudy hour observed, 12 p.m.; mean, 0.62.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South	East.	West.
2402.53	549.54	2456.31	1015.63

Resultant direction, N. 38° E.; Resultant velocity, 3.16.
Mean velocity, 6.87 miles per hour.
Maximum velocity, 26.5 miles, from 4 to 5 p.m. of 13th.
Most windy day, 13th; mean velocity, 18.19 miles per hour. } Difference, 15.61 miles.
Least windy day, 22nd; mean velocity, 2.58 miles per hour.
Most windy hour, 11 a.m.; mean velocity, 9.24 miles per hour } Difference, 4.28 miles.
Least windy hour, 4 a.m.; mean velocity, 4.96 miles per hour

5th May, severe thunder storm at 3 p.m. Very large hail and an enormous quantity of rain fell in a short time; 1.195 in half an hour. Solar halo recorded on 5th. Lunar haloes on 6th and 31st. Fog recorded on 5th, 11th, 14th, 17th, 23rd and 29th. Hoar frost on 1st and 9th.

COMPARATIVE TABLE FOR MAY.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1840	53.8	+ 2.4	76.4	31.2	45.2	9	4.150	0	0.0	...	...	...
1841	50.5	— 0.9	78.0	26.5	51.5	11	2.350	1	...	...	...	0.35 lbs
1842	49.1	— 2.3	74.8	27.3	47.5	7	1.275	0	0.0	...	...	0.53
1843	49.1	— 2.3	79.8	29.2	50.6	5	1.570	0	0.0	...	...	0.52
1844	53.6	+ 2.2	78.4	28.7	49.7	14	5.670	0	0.0	...	...	0.80
1845	49.6	— 1.8	77.8	27.8	50.0	8	2.300	0	0.0	...	...	0.55
1846	55.5	+ 4.1	79.7	33.1	46.6	9	4.375	0	0.0	...	...	0.46
1847	54.4	+ 3.0	72.1	26.7	45.4	12	2.040	0	0.0	...	...	0.29
1848	54.1	+ 2.7	78.0	31.3	46.7	13	2.520	0	0.0	W 40 W	1.31	4.93 m.
1849	48.0	— 3.4	72.2	27.9	44.3	16	5.115	0	0.0	N 51 E	1.97	5.33
1850	47.6	— 3.8	77.8	27.5	50.3	17	0.545	1	Insp.	N 64 W	2.05	6.32
1851	51.3	— 0.1	73.3	28.0	45.3	12	2.950	1	0.5	N 32 W	1.59	6.34
1852	51.4	— 0.0	73.3	32.0	41.3	7	1.125	1	Insp.	S 82 W	0.99	4.00
1853	50.9	— 0.5	78.4	32.2	46.2	17	4.420	1	Insp	N 2 W	0.83	5.16
1854	52.2	+ 0.8	71.4	25.2	46.2	11	4.630	0	0.0	E	0.40	5.38
1855	53.1	+ 1.7	77.5	33.0	44.5	6	2.565	2	0.9	N 1 W	2.76	5.96
1856	50.5	— 0.9	82.2	31.2	51.0	14	4.580	1	Insp	N 4 E	3.99	9.81
1857	48.9	— 2.5	74.8	26.0	48.8	15	4.145	1	Insp.	N 23 W	1.14	8.13
1858	48.9	— 2.5	69.8	31.0	38.8	17	6.367	0	0.0	N 42 E	3.33	9.30
1859	55.2	+ 3.8	79.6	39.5	40.1	11	3.410	0	0.0	N 72 E	1.59	5.70
1860	55.5	+ 4.1	74.5	32.5	42.0	16	1.815	0	0.0	N 26 E	2.66	7.17
1861	47.5	— 3.9	73.0	28.0	45.0	12	3.380	1	0.5	N 47 W	3.60	9.17
1862	52.2	+ 0.8	78.5	32.4	46.1	8	1.427	0	0.0	N 52 W	2.80	7.87
1863	54.3	+ 2.9	79.0	36.4	42.6	14	3.363	1	0.1	N 56 E	0.41	5.89
1864	54.8	+ 3.4	79.0	32.2	46.8	18	4.070	0	0.0	N 7 W	1.86	5.64
1865	52.3	+ 0.9	79.0	30.0	49.0	11	4.005	0	0.0	N 3 W	1.65	5.48
1866	48.3	— 3.1	73.4	33.4	40.0	13	2.820	0	0.0	N 46 W	4.49	9.26
1867	46.5	— 4.9	65.0	24.6	40.4	18	3.220	1	Insp.	N 51 W	3.55	8.40
1868	51.8	+ 0.4	73.0	33.2	39.8	16	7.670	0	0.0	N 38 E	3.16	6.87
Results to 1867.	51.40	.....	75.96	30.17	45.78	11.82	3.221	0.48	0.08	N 16 W	1.65	6.76
Excess for 1868.	+0.42	.....	—2.96	+3.03	—5.98	+ 4.18	+ 4.449	— 0.48	— 0.08	...	...	+ 0.11

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—JUNE, 1868.

Latitude—43° 39′4 *North.* *Longitude*—5*h.* 17*m.* 33*s. West.* *Elevation above Lake Ontario*, 108 *feet*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M	M'N.		6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN		
					°	°	°	°	°												°							
1	29.722	29.687	29.685	29.6957	50.4	58.0	51.8	54.67	— 2.28	.320	.382	.228	.315	86	79	58	72	Calm	Calm	N	N 10 W	0.0	0.0	13.4	5.75	6.86	0.010	...
2	.780	.749	.787	.7732	48.6	56.2	50.8	52.23	— 5.03	.221	.275	.262	.253	64	60	70	64	N b E	S	N b E	N 37 E	8.1	6.5	5.0	0.77	5.18	...	...
3	.824	.811	.796	.8070	47.2	54.0	52.6	52.03	— 5.52	.239	.251	.239	.241	74	59	60	62	N E b N	N E b N	E b N	N 66 E	4.2	10.6	6.4	7.31	7.64	...	...
4	.799	.817	.713	.7742	52.9	60.5	57.6	57.55	— 0.30	.349	.395	.342	.363	87	74	72	76	N E b E	N S E	N E b E	N 82 E	2.2	7.4	7.8	4.29	4.68	.440	...
5	.668	.501	.494	.5450	51.8	60.5	55.8	56.82	— 1.33	.375	.456	.422	.427	97	86	95	92	E	S E	S W b S	S 3 E	6.0	2.4	7.2	2.92	4.90	.825	...
6	.440	.467	.678	.5500	56.2	64.1	51.1	57.43	— 1.02	.417	.499	.289	.404	93	83	76	84	S b W	N W b N	N b W	N 31 W	7.4	10.4	17.2	6.18	9.03	.540	...
7	.892	.905	—	—	46.8	53.3	—	—	—	.253	.312	—	—	79	76	—	—	N b E	S b E	S b E	S 44 E	6.8	4.4	1.9	2.68	4.15	...	...
8	.829	.689	.746	.7537	48.6	63.7	52.2	58.88	— 5.18	.292	.428	.305	.334	85	72	78	79	Calm	S b E	N W	S 66 W	0.0	12.8	11.0	2.15	7.06	.020	...
9	.784	.811	.826	.8060	43.5	56.2	50.4	50.93	— 8.55	.231	.306	.257	.267	82	68	69	71	N W b N	S	N b W	N 53 W	4.0	6.8	9.0	1.68	4.35	...	...
10	.893	.878	.843	.8725	48.2	59.8	49.3	53.88	— 5.90	.277	.347	.303	.310	82	67	86	75	N b W	S b W	S b W	S 1 W	2.8	8.0	1.8	1.19	4.27	...	...
11	.854	.811	.703	.7770	51.1	60.5	50.0	55.45	— 4.53	.269	.315	.283	.293	71	59	78	67	N b E	E S E	N b E	N 64 E	1.0	6.4	1.8	2.60	4.40	...	...
12	.693	.643	.636	.6542	57.2	69.1	59.8	63.87	+ 3.60	.381	.432	.417	.421	81	61	81	71	N W b N	S b W	S b W	N 68 W	6.2	7.6	2.0	2.65	4.67	Insp.	...
13	.677	.685	.693	.6877	59.4	69.9	59.8	64.40	+ 3.82	.422	.501	.392	.462	83	68	76	76	Calm	S E b E	E b S	S 79 E	0.0	3.4	8.2	1.91	3.21	Insp.	...
14	.722	.693	—	—	61.9	72.0	—	—	—	.401	.514	—	—	73	65	—	—	N E b E	E S E	E	N 88 E	5.0	5.5	2.3	2.99	3.43	...	...
15	.631	.613	.571	.6050	65.2	70.2	57.6	63.25	+ 2.12	.484	.523	.434	.458	78	71	92	79	N	N N E	S	N 57 E	3.3	1.8	4.0	0.42	3.16	.275	...
16	.604	.628	.614	.6145	66.3	73.8	67.7	69.63	+ 8.28	.576	.718	.599	.612	89	85	88	84	N W b N	S b W	S b W	N 45 W	3.4	4.5	3.0	3.84	5.49	...	...
17	.635	.597	.572	.5968	67.0	79.6	66.8	72.40	+10.75	.553	.700	.584	.617	83	68	83	77	W b S	S	S b W	N 81 W	5.6	8.2	0.6	2.32	4.50	...	...
18	.578	.585	.439	.5066	68.8	82.5	60.5	71.98	+10.03	.515	.589	.360	.541	74	52	69	67	N	S	Calm	S 23 W	1.6	11.5	0.0	4.03	5.17	...	...
19	.416	.331	.274	.3353	70.6	78.5	68.8	72.70	+10.57	.589	.763	.570	.638	79	78	81	79	S W b S	S b W	S W b S	S 23 W	3.8	10.2	5.2	6.84	7.16	...	...
20	.309	.360	.470	.3892	68.4	73.5	59.4	67.47	+ 5.02	.548	.522	.398	.480	79	63	78	81	W N W	N	N N W	N 17 W	9.6	12.2	7.2	8.59	9.48	...	...
21	.549	.573	—	—	57.6	63.4	—	—	—	.399	.469	—	—	84	80	—	—	N b E	S E	N N W	N 1 W	9.2	5.0	9.3	5.80	7.43	.040	...
22	.590	.630	.616	.6147	58.3	67.7	61.2	62.28	— 0.67	.401	.490	.410	.419	83	73	76	74	N	S b E	W b S	S 76 W	10.2	2.8	4.3	1.12	4.51	.022	...
23	.632	.612	.653	.6328	58.3	71.7	59.8	62.00	— 1.15	.344	.438	.360	.382	71	56	72	69	W N W	W S W	N E b N	N 55 W	2.8	5.8	3.8	2.47	5.23	.045	...
24	.709	.772	.786	.7577	56.5	64.8	59.8	61.93	— 1.42	.356	.438	.392	.411	78	72	76	74	N N E	E S E	N E b N	N 77 E	4.8	13.8	5.0	4.54	5.58	...	...
25	.833	.829	.782	.8117	59.8	70.2	59.4	64.05	+ 0.50	.428	.442	.410	.436	83	60	81	74	N N E	E S E	E	N 81 E	5.0	7.2	5.3	3.97	4.94	...	...
26	.756	.674	.612	.6728	61.9	74.6	68.1	68.02	+ 4.18	.439	.520	.394	.449	79	60	57	66	Calm	S b W	N W b N	S 83 W	0.0	6.0	5.2	0.90	4.30	...	...
27	.576	.531	.557	.5493	60.9	80.0	70.6	71.10	+ 7.08	.389	.596	.492	.501	73	58	66	65	N W b N	N b W	N N W	N 29 W	2.2	6.2	11.2	7.46	8.04	...	...
28	.637	.663	—	—	64.1	70.2	—	—	—	.447	.442	—	—	75	60	—	—	N	S S E	E S E	S 32 E	3.4	11.6	2.8	2.34	3.22	...	...
29	.723	.697	.672	.6930	61.2	71.3	61.2	65.47	+ 1.02	.434	.415	.422	.432	80	55	78	70	Calm	E b S	E	S 81 E	0.0	7.6	4.0	3.55	3.84	...	...
30	.671	.646	.657	.6620	61.6	74.2	64.8	66.32	+ 1.73	.420	.612	.476	.496	77	73	77	77	N N E	S E	E	S 81 E	4.2	7.5	3.0	2.04	2.49	...	...
M	29.6779	29.6540	29.6490	29.6591	57.69	67.89	58.80	61.99	+ 0.96	.395	.475	.386	.422	80	68	76	74	.....	.....	.....	.....	4.09	7.14	5.46	.....	5.26	2.217	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JUNE, 1868.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 29.921 at 8 a.m. on 10th.
Lowest Barometer . . . . . 29.274 at 10 p.m. on 19th. } Monthly range= 0.647 inches.

Self-registering Thet.

Maximum temperature . . . . 84°2 on 18th
Minimum temperature . . . . 38°0 on 10th } Monthly range=46°2

Mean maximum temperature . . 70°60
Mean minimum temperature . . 52°32 } Mean daily range=18°28

Greatest daily range . . . . . 27°2 from a.m. to p.m. of 12th.
Least daily range . . . . . 10°0 from a.m. to p.m. of 21st.

Warmest day . . . 19th...Mean temperature . . . 72°70
Coldest day . . . . 9th...Mean temperature . . . 50°93 } Difference=21°77.

Maximum Radiation { Solar . . . . . 104°.0 on 18th
Terrestrial. . . . . 26°.8 on 10th } Monthly range=77°.2

Aurora observed on 4 nights, viz.:—7th, 10th, 16th and 17th.
Possible to see Aurora on 19 nights; impossible on 11 nights.
Raining on 11 days; depth, 2.217 inches; duration of fall, 30.7 hours.
Mean of cloudiness=0.51. Most cloudy hour observed, 2 p.m.; mean, 0.60; least do., do., 10 p.m.; mean, 0.39.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1662.61	1076.25	1080.37	910.85

Resultant direction, N. 16° E.; resultant velocity, 0.85.
Mean velocity, 5.26 miles per hour.
Maximum velocity, 19.5 miles, from 7 to 8 p.m. of 6th.

Most windy day, 20th; mean velocity, 9.48 miles per hour.
Least windy day, 30th; mean velocity, 2.49 miles per hour. } Difference, 6.99 miles.

Most windy hour, 2 p.m.; mean velocity, 7.38 miles per hour.
Least windy hour, 4 a.m.; mean velocity, 3.37 miles per hour. } Difference. 4.01 miles.

5th. Thunder storm during afternoon, and again during night.
11th. Solar halo. 15th. Thunder storm. 23rd. Thunder storm.
28th. Lunar halo.
Fog recorded on four occasions. Dew on ten mornings.
8th. Ice 0.2 of an inch said to have been seen in Toronto this morning.

COMPARATIVE TABLE FOR JUNE.

YEAR	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1840	59.8	— 1.7	79.9	36.7	43.2	11	4.860	...	...	...	...	...
1841	66.6	+ 4.1	98.1	45.3	47.8	9	1.560	...	...	...	...	0.36 lbs.
1842	55.6	— 5.9	80.2	28.1	52.1	15	5.755	...	...	...	...	0.31
1843	58.4	— 3.1	83.3	28.2	55.1	12	4.595	...	...	...	...	0.27
1844	59.9	— 1.6	83.3	33.2	50.1	9	3.535	...	...	...	...	0.19
1845	61.0	— 0.5	84.6	38.5	46.1	11	3.715	...	...	...	...	0.27
1846	63.3	+ 1.8	84.2	39.1	45.1	10	1.920	...	...	...	...	0.32
1847	58.4	— 3.1	77.8	36.7	41.1	14	2.625	...	...	...	...	0.30
1848	62.9	+ 1.4	92.0	37.4	54.6	8	1.810	...	...	N 61 W	1.90	4.51 miles.
1849	63.2	+ 1.7	84.4	35.2	49.2	7	2.020	...	...	S 71 E	0.49	3.32
1850	64.3	+ 2.8	85.6	34.2	51.4	10	3.345	...	...	S 60 W	0.38	4.54
1851	59.2	— 2.3	79.2	37.0	42.2	11	2.695	...	...	S 2 W	1.26	4.42
1852	60.8	— 0.7	86.1	37.2	48.9	10	3.160	...	...	S 76 W	1.49	4.09
1853	65.5	+ 4.0	89.5	39.2	50.3	9	1.550	...	...	N 1 W	0.10	3.73
1854	64.1	+ 2.6	92.5	35.2	57.3	9	1.460	...	...	N 24 E	0.71	4.15
1855	59.9	— 1.6	91.5	36.2	55.3	17	4.070	...	...	N 69 W	1.33	5.70
1856	62.1	+ 0.6	89.2	42.0	47.2	13	3.200	...	...	S 21 W	0.90	5.30
1857	56.9	— 4.6	76.0	35.0	41.0	21	5.060	...	...	N 49 W	1.15	7.60
1858	66.2	+ 4.7	90.2	42.5	47.7	12	2.943	...	...	S 20 E	0.25	5.53
1859	58.3	— 3.2	86.4	32.2	54.2	16	4.085	2	Inp.	N 77 W	1.95	7.19
1860	63.2	+ 1.7	81.6	49.2	32.4	14	2.136	...	...	N 44 W	3.13	7.61
1861	61.3	— 0.2	87.8	41.6	46.2	13	2.329	...	...	N 39 W	2.29	6.11
1862	60.5	— 1.0	85.4	39.4	46.0	10	1.007	...	...	N 26 W	1.77	5.98
1863	60.1	— 1.4	84.8	37.4	47.4	18	1.662	...	...	N 50 W	2.26	5.24
1864	63.0	+ 1.5	93.4	34.8	58.6	5	0.670	...	...	N 55 W	1.72	4.53
1865	64.5	+ 3.0	90.2	43.0	47.2	7	2.005	...	...	S 30 W	0.60	4.06
1866	60.2	— 1.3	90.5	40.0	50.5	15	2.720	...	...	S 15 W	0.71	5.09
1867	64.3	+ 2.8	88.6	44.0	44.6	8	0.885	...	...	S 84 E	0.48	4.13
1868	62.0	+ 0.5	84.2	38.0	46.2	11	2.217	...	...	N 16 E	0.85	5.26
Results to 1867.	61.52	.....	86.12	37.80	48.32	11.39	2.760	...	...	N 64 W	0.80	5.14
Exs. for 1868.	+0.48	.....	—1.92	+0.20	+2.12	0.39	0.543	...	...	...	+ 0.05	+ 0.12

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—JULY, 1868.

Latitude—43° 39′4 *North. Longitude*—5*h.* 17*m.* 33*s. West. Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 PM	M'N		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Re-sult'.	M'N.		
1	29.693	29.688	29.713	29.6955	68.1	84.7	71.7	75.58	+10.85	.608	.797	.676	.679	88	67	88	78	Calm.	s b E	Calm.	s 6 W	0.0	3.6	0.0	4.02	4.14	...	...
2	.765	.713	.697	.7242	72.0	85.0	71.3	76.12	+11.12	.672	.775	.651	.705	86	66	86	79	Calm.	s z b s	Calm.	s 10 E	0.0	3.6	0.0	1.91	2.88	...	...
3	.733	.734	.687	.7200	73.1	81.1	73.1	76.67	+11.52	.692	.810	.692	.725	85	76	85	79	Calm.	s z b E	z b N	s 81 E	0.0	4.5	4.0	1.42	2.54	...	...
4	.665	.586	.631	.6240	73.1	90.1	83.2	82.40	+17.10	.706	.796	.782	.768	86	56	68	70	Calm.	s b W	N b W	s 63 W	0.0	10.0	6.4	3.85	8.64	...	...
5	.710	.718	—	—	71.0	85.0	—	—	—	.394	.467	—	—	52	39	—	—	N N W	N b E	N N W	N 14 W	17.0	9.2	7.5	7.86	8.28	...	...
6	.725	.665	.598	.6633	68.1	77.8	69.5	71.87	+ 6.27	.551	.580	.532	.556	80	61	74	72	N E b E	s z b E	Calm.	s 84 E	8.0	7.0	0.0	4.22	4.37	.060	...
7	.499	.431	.456	.4653	67.7	83.6	73.1	73.65	+ 7.95	.613	.710	.687	.672	90	62	85	82	N b W	s z b E	z b S	N 51 E	2.6	6.2	2.2	1.25	4.11	.245	...
8	.534	.552	.564	.5502	68.4	80.3	71.3	74.30	+ 8.52	.561	.674	.607	.616	80	65	79	72	N N W	s b W	s b W	N 30 W	7.6	4.6	3.6	2.38	5.44	...	...
9	.647	.645	.629	.6362	70.6	80.0	68.8	73.32	+ 7.33	.518	.661	.612	.599	69	64	87	73	N N E	s E	E	N 86 E	3.8	9.2	1.4	4.64	5.25	...	...
10	.676	.676	.643	.6633	72.0	81.1	68.1	75.05	+ 8.97	.641	.631	.608	.619	82	59	88	72	N E b N	E S E	S E	S 73 E	1.5	5.0	1.5	3.51	3.78	...	...
11	.688	.664	.640	.6607	72.4	86.8	73.1	78.23	+12.05	.608	.555	.570	.602	76	43	70	63	Calm.	s b E	s	s 6 E	0.0	6.5	1.0	2.56	2.70	...	...
12	.679	.654	—	—	72.0	89.0	—	—	—	.569	.901	—	—	73	56	—	—	S	s b E	s b E	s 14 E	1.6	4.6	0.9	2.16	2.38	...	...
13	.677	.631	.661	.6670	75.3	91.2	82.5	83.95	+17.57	.642	.762	.708	.732	74	52	68	64	Calm.	s b E	E	s 35 E	0.0	4.7	3.2	2.28	2.63	...	...
14	.675	.617	.569	.6147	77.1	90.4	82.9	84.50	+18.08	.732	.809	.770	.770	78	56	68	65	E	s z b s	s b E	s 6 E	1.6	6.5	1.0	0.94	4.32	...	...
15	.592	.529	.537	.5483	78.5	88.3	76.0	82.43	+15.95	.762	.819	.653	.806	78	61	73	72	N W b N	s b W	N W b N	N 34 W	0.8	5.0	14.5	6.48	8.53	...	...
16	.615	.619	.598	.6130	69.2	80.7	69.5	73.62	+ 7.03	.522	.571	.532	.538	73	54	74	66	N	s s E	S	s 60 E	8.0	7.5	3.6	3.52	5.10	...	...
17	.644	.615	.590	.6130	67.4	83.9	71.0	75.05	+ 8.37	.480	.469	.541	.517	71	40	71	61	S E	S b E	E S E	s 25 E	2.8	10.0	1.2	2.87	3.09	...	...
18	.592	.529	.551	.5567	70.2	89.4	81.8	81.07	+14.38	.538	.752	.718	.720	70	54	66	67	Calm.	S S E	W N W	s 60 W	0.0	8.0	4.6	0.57	5.37	.030	...
19	.588	.612	—	—	78.2	84.7	—	—	—	.701	.764	—	—	73	63	—	—	N W b N	S E	E b S	s 87 E	3.0	6.0	2.3	3.26	5.03	...	...
20	.665	.661	.594	.6357	72.4	81.8	73.1	76.18	+ 9.42	.593	.455	.513	.513	75	41	63	57	N N E	E b S	E b N	N 86 E	4.6	11.0	1.8	5.68	6.04	...	...
21	.578	.528	.498	.5340	68.1	82.5	76.0	76.72	+ 9.96	.579	.775	.652	.680	85	69	73	74	Calm.	s b E	Calm.	s 76 E	0.0	1.8	0.0	0.32	2.02	...	...
22	.503	.482	.514	.4992	70.6	80.3	72.8	75.88	+ 8.97	.646	.707	.695	.682	86	67	86	76	N W b W	E S E	E N E	N 72 E	4.2	7.8	3.6	3.98	4.79	...	...
23	.532	.460	.398	.4547	66.3	73.8	72.0	71.32	+ 4.43	.366	.518	.628	.506	56	62	80	65	N E	E b N	E b N	N 56 E	5.5	5.2	5.6	3.20	4.37	inap.	...
24	.376	.365	.422	.3852	69.9	85.0	72.4	75.33	+ 8.47	.612	.533	.523	.555	84	44	65	65	N W b N	N W b N	N W b N	N 17 W	4.4	6.0	7.5	4.12	6.08	...	...
25	.507	.538	.604	.5547	65.6	78.9	60.9	69.42	+ 2.45	.493	.522	.343	.456	77	53	64	63	N	s b W	N N W	N 1 W	6.0	6.0	2.0	1.76	6.17	...	...
26	.702	.696	—	—	61.2	76.7	—	—	—	.374	.409	—	—	69	44	—	—	N b W	s	s b W	N 42 E	7.0	3.8	3.5	0.77	2.93	...	...
27	.723	.690	.668	.6935	62.7	76.0	68.8	70.37	+ 3.38	.379	.575	.528	.507	66	64	75	67	N E	s E b E	E S E	s 78 E	4.2	6.4	3.4	3.11	3.42	...	...
28	.693	.651	.659	.6603	64.8	82.1	73.8	74.23	+ 7.27	.450	.571	.422	.495	73	52	50	59	E b N	s b E	N	N 2 E	4.0	4.0	9.5	1.39	5.57	...	...
29	.695	.689	.659	.6737	63.4	81.4	71.3	71.62	+ 4.67	.494	.516	.468	.506	84	48	61	67	N N W	Calm.	N N W	N 22 W	1.0	0.0	3.2	2.66	2.67	...	...
30	.693	.663	.623	.6553	63.0	81.8	72.0	72.95	+ 6.00	.386	.572	.557	.505	67	52	70	62	N N W	s z b s	s W	s 10 W	4.6	4.4	1.2	1.49	3.04	...	...
31	.550	.437	.392	.4468	70.6	80.7	73.5	74.93	+ 7.98	.646	.749	.672	.698	87	71	82	81	s w b s	w s w	s w b s	s 34 W	0.5	11.0	14.2	8.81	9.03	.175	...
M	29.6270	29.5950	27.5840	29.6003	69.65	82.91	73.09	75.80	+ 9.55	.574	.654	.606	.619	78	58	74	69	.....	.....	.....	.....	3.36	6.42	3.69	...	4.66	0.510	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JULY, 1868.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....29.782 at 8 a m. on 2nd
Lowest Barometer.....29.340 at 4 p.m. on 24th } Monthly range= 0.442 inches.

Self-registering Ther.
- Maximum Temperature .....93°4 on 13th
- Minimum Temperature.....59°0 on 26th } Monthly range= 34°.4
- Mean Maximum Temperature .....85°40
- Mean Minimum Temperature .....66°16 } Mean daily range= 19°.24
- Greatest daily range.....27°4 from a.m. to p.m. of 1st.
- **Least daily range .....12°4 from a m. to p m. of 23rd.**

Warmest Day.....14th...Mean Temperature.....84°50
Coldest Day.....25th...Mean Temperature.....69°42 } Difference=15°.08

Maximum Radiation.
- **Solar** .....114°0 on 15th
- **Terrestrial**..... 47°2 on 26th } Monthly range= 66°.8

Aurora observed on 4 nights, viz.:—10th, 11th, 13th and 14th.
Possible to see Aurora on 18 nights; impossible on 13 nights.
Raining on 5 days; depth 0.510 inches; duration of fall 11.5 hours.
Mean of Cloudiness=0.59.
Most cloudy hour observed 6 a.m.; Mean, 0.67; least cloudy hour, midnight; Mean, 0.48.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1248.83	1278.98	1178.35	643.90

Resultant Direction S. 87° E.; Resultant Velocity 0.72.
Mean Velocity 4.66 miles per hour.
Maximum Velocity 19.6 miles, from 6 to 7 a.m. of **5th.**
Most Windy day 31st; Mean Velocity 9.03 miles per hour.
Least Windy day 21st; Mean Velocity 2.02 miles per hour. } Difference 7.01 miles.
Most Windy hour Noon; Mean Velocity 7.41 miles per hour.
Least Windy hour 7 p.m.; Mean Velocity 2.87 miles per hour. } Difference 4.54 miles.

2nd, thunder storm. 7th, thunder storm. 7th, lunar halo.
18th, thunder storm. 31st, thunder storm.
Dew recorded on 9 mornings, fog on 3 occasions.
July, 1868. The temperature of this month **exceeds any previously experienced here, and seems to have been generally felt as such. On four days, viz., 4th, 13th, 14th and 15th, the mean temperature of the day exceeds the warmest day previously recorded.** The amount of rain is also the **smallest recorded, being 2.9 less than the average.**

COMPARATIVE TABLE FOR JULY.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velo'y.	Mean Velocity
	°	°	°	°	°							
1840	65.8	— 1.3	82.3	47.0	35.3	6	5.270	...	...	...	...	...
1841	65.0	— 2.1	89.0	39.9	49.1	10	8.150	...	...	...	...	**0.27 lbs**
1842	64.7	— 2.4	91.0	42.5	48.5	4	3.050	...	...	...	...	**0.33**
1843	64.5	— 2.6	86.8	38.7	48.1	8	4.605	...	...	...	...	**0.44**
1844	66.0	— 1.1	86.6	40.1	46.5	12	2.815	...	...	...	...	**0.19**
1845	66.2	— 0.9	95.0	45.7	49.3	7	2.195	...	...	...	...	**0.30**
1846	68.0	+ 0.9	94.6	44.5	50.1	9	2.895	...	...	...	...	**0.29**
1847	68.0	+ 0.9	87.0	43.2	43.8	8	3.355	...	...	...	...	**0.19**
1848	65.5	— 1.6	82.2	44.1	38.1	10	1.890	...	...	N 14 W	0.18	**4.94mls**
1849	68.4	+ 1.3	88.6	45.2	43.4	4	3.415	...	...	S 5 W	0.75	**3.52**
1850	68.9	+ 1.8	86.2	51.6	34.6	12	5.270	...	...	N 81 E	0.59	**4.56**
1851	65.0	— 2.1	82.7	46.5	36.2	12	3.625	...	...	N 60 W	0.88	**4.13**
1852	66.8	— 0.3	90.1	48.5	41.6	8	4.025	...	...	N 43 W	0.93	**3.33**
1853	65.6	— 1.5	91.3	41.6	49.7	10	0.015	...	...	S 58 E	0.24	**3.69**
1854	72.5	+ 5.4	98.0	42.5	55.5	9	4.805	...	...	S 49 W	0.37	**4.03**
1855	67.9	+ 0.8	92.8	49.2	43.6	13	3.245	...	...	S 19 W	0.73	**6.47**
1856	69.9	+ 2.8	96.6	49.5	47.1	8	1.120	...	...	N 79 W	1.57	**5.84**
1857	67.8	+ 0.7	86.6	47.0	39.6	15	3.475	...	...	S 68 E	0.81	**4.74**
1858	67.9	+ 0.8	85.0	52.0	33.0	13	3.072	...	...	N 15 E	1.13	**5.76**
1859	66.9	— 0.2	88.0	44.7	43.3	12	2.611	...	...	N 56 W	1.48	**5.81**
1860	63.9	— 3.2	88.0	43.8	44.2	13	4.330	...	...	N 60 W	2.15	**7.29**
1861	65.4	— 1.7	84.6	47.0	37.5	16	2.635	...	...	N 74 W	1.43	**4.66**
1862	66.7	— 0.4	95.5	48.2	47.3	15	5.344	...	...	S 89 W	1.42	**5.80**
1863	67.6	+ 0.5	83.5	48.0	35.5	15	3.408	...	...	N 18 W	0.40	**3.89**
1864	69.7	+ 2.6	90.2	49.0	41.2	8	1.332	...	...	N 61 W	2.23	**6.00**
1865	65.0	— 2.1	83.0	45.8	37.2	11	2.470	...	...	N 86 W	2.28	**5.34**
1866	70.4	+ 3.3	94.0	47.8	46.2	16	5.390	...	...	S 79 W	0.94	**4.17**
1867	68.2	+ 1.1	94.0	48.2	45.8	12	1.965	...	...	N 48 W	1.40	**5.45**
1868	75.8	+ 8.7	93.4	59.0	34.4	5	0.510	...	...	S 87 E	0.72	**4.66**
Result'ts to 1867.	67.08	...	89.04	45.78	43.26	10.57	3.453	...	...	N 69 W	0.74	**4.97**
Excess for '68	+ 8.72	...	+ 4.36	+ 13.22	— 8.86	— 5.57	— 2.943	...	...	...	...	**— 0.31**

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—AUGUST, 1868.

Latitude—43° 39′4 *North. Longitude*—5h. 17m. 33s. *West. Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Result't.	Velocity of Wind.					Rain in inches.	Snow in inches.
	6. A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M	M'N		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result't.	M'N.		
					°	°	°	°	°																			
1	29.296	29.244	29.267	29.2688	71.0	76.7	67.4	71.15	+ 4.18	.641	.690	.481	.606	84	75	71	79	W S W	W b S	W N W	N 77 W	6.0	10.0	3.2	3.77	4.65	.075	...
2	.258	.228	—	—	61.6	81.8	—	—	—	.421	.607	—	—	77	56	—	—	Calm.	N W b W	N N W	N 51 W	0.0	20.0	7.0	7.55	8.86	...	...
3	.438	.556	.631	.5588	61.2	75.7	65.2	67.60	+ 0.75	.428	.493	.432	.462	79	55	70	68	N	S E b S	N	N 19 E	7.0	9.5	13.8	2.61	6.79	...	...
4	.679	.742	.780	.7445	64.1	74.2	65.6	68.80	+ 2.00	.398	.403	.465	.432	66	48	73	62	N E E	E S E	E S E	EAST.	6.2	8.0	3.2	4.77	6.31	...	...
5	.869	.873	.874	.8763	64.1	78.9	63.7	69.75	+ 2.95	.435	.564	.376	.465	73	57	64	63	N E E	S S E	S E E	S 59 E	7.0	12.6	2.0	2.03	5.73	...	...
6	.859	.808	.733	.8000	62.3	78.9	67.7	71.02	+ 4.25	.383	.393	.476	.436	68	39	70	58	N	E S E	E	S 68 E	4.2	9.2	4.0	4.24	5.45	...	...
7	.658	.510	.363	.5002	60.9	76.7	74.6	71.92	+ 5.23	.433	.479	.550	.524	81	51	63	67	N E E	E E S	S S E	S 68 E	3.0	10.6	9.0	5.39	7.55	inap.	...
8	.343	.250	.304	.2943	67.0	81.1	67.0	71.75	+ 5.08	.581	.586	.498	.557	88	56	76	72	S W	S b W	W b S	S 39 W	4.3	19.2	7.0	8.97	10.47	inap.	...
9	.328	.429	—	—	60.9	69.9	—	—	—	.438	.447	—	—	81	61	—	—	W b S	W	N W	N 86 W	8.0	15.8	3.2	8.79	9.21	...	...
10	.636	.627	.605	.6315	57.3	67.7	62.3	62.67	— 3.85	.380	.351	.419	.392	80	51	75	69	N W	S b W	E S E	S 44 W	0.5	11.2	1.0	1.68	5.37	.020	...
11	.657	.614	.641	.6368	57.1	65.2	59.4	60.38	— 6.10	.407	.458	.410	.418	87	73	81	80	N N E	S	N N W	N 32 W	3.8	5.0	15.0	3.41	5.52	.100	...
12	.707	.753	.785	.7509	56.9	67.0	56.5	60.18	— 6.15	.396	.333	.328	.326	85	50	70	64	N W	N W b W	N N W	N 37 W	6.4	9.0	8.6	7.47	8.35	inap.	...
13	.782	.724	.721	.7403	51.5	78.2	63.4	66.08	— 0.15	.283	.297	.333	.307	74	30	57	51	W N W	W b N	W N W	N 73 W	2.5	15.4	2.0	8.47	8.51	...	...
14	.726	.641	.649	.6660	57.6	80.3	64.5	68.97	+ 2.73	.342	.390	.366	.381	72	37	60	55	Calm.	W S W	W b S	S 74 W	0.0	15.2	3.2	5.69	6.66	...	...
15	.623	.529	.617	.5875	64.5	78.9	66.9	69.88	+ 3.18	.494	.303	.500	.413	81	30	78	61	W b S	W b S	N W	N 79 W	2.6	18.0	10.5	6.45	9.32	.020	...
16	.748	.775	—	—	56.5	65.9	—	—	—	.368	.356	—	—	80	52	—	—	N b W	S b E	E b N	S 61 E	2.0	7.0	1.0	2.28	4.11	...	...
17	.852	.837	.764	.8148	52.9	65.2	56.2	59.07	— 6.90	.318	.331	.389	.349	78	60	75	70	E N E	N E b E	E b N	EAST.	1.4	8.6	1.2	5.88	6.00	...	...
18	.671	.574	.480	.5693	59.0	69.2	67.0	65.60	— 0.23	.415	.607	.526	.523	83	86	80	83	E N E	E b S	S S W	S 4 W	3.6	8.4	12.5	4.68	7.28	.225	...
19	.516	.532	.532	.5337	64.5	73.1	68.8	69.38	+ 3.62	.560	.627	.612	.596	92	78	87	88	S W	S b W	S S W	S 17 W	3.0	9.0	4.2	5.61	5.68	inap	...
20	.563	.598	.671	.6280	64.1	69.2	61.9	65.02	— 0.52	.499	.607	.428	.506	83	85	77	81	Calm.	N W b N	N N W	N 27 W	0.0	4.5	13.0	4.77	6.25	.350	...
21	.785	.807	.807	.8028	59.0	69.9	61.6	63.92	— 1.52	.414	.408	.368	.397	83	55	67	67	N	S b E	S b W	N 36 W	4.8	8.0	3.6	0.42	4.79	...	...
22	.852	.824	.781	.8155	58.0	73.8	61.6	64.47	— 0.88	.405	.475	.405	.424	84	57	74	71	N B W	S B E	E B N	S 44 E	4.0	6.0	0.6	1.29	2.60	...	...
23	.801	.690	—	—	57.3	75.3	—	—	—	.380	.526	—	—	80	60	—	—	N E	S b E	Calm.	S 30 E	1.0	8.0	0.0	1.77	2.20	...	...
24	.658	.637	.644	.6450	55.8	74.6	64.8	66.15	+ 1.20	.365	.479	.488	.458	82	56	80	70	Calm.	S S E	E	S 52 E	0.0	5.0	4.2	1.77	2.06	...	...
25	.666	.639	.657	.6575	59.4	80.3	64.8	68.96	+ 4.22	.446	.517	.489	.486	88	50	80	71	Calm.	S b E	Calm.	S 16 E	0.0	6.6	0.0	3.08	3.14	...	...
26	.722	.748	.737	.7340	64.8	80.3	65.9	71.25	+ 6.72	.438	.456	.436	.478	72	47	68	64	S W	S	N	N 44 E	3.0	5.8	4.0	1.47	3.92	...	...
27	.903	.904	.886	.8742	58.0	65.2	60.1	62.12	— 2.20	.337	.408	.401	.380	70	65	77	68	N E b E	E	E	N 86 E	2.6	8.6	1.2	5.36	5.56	...	...
28	.740	.629	.590	.6422	61.2	81.1	67.7	71.50	+ 7.37	.461	.615	.543	.562	86	58	80	74	N N E	S b E	S S W	S 6 W	2.0	10.0	3.8	6.64	7.20	.070	...
29	.540	.454	.528	.5070	66.1	81.4	68.4	72.88	+ 9.07	.579	.708	.548	.601	85	65	79	74	S W b S	S S W	N b W	S 33 W	7.0	14.0	2.0	5.56	8.49	.040	...
30	.621	.645	—	—	60.9	71.3	—	—	—	.465	.481	—	—	87	63	—	—	N	S	N	N 48 W	4.2	10.4	6.5	1.35	5.04	...	...
31	.631	.467	.318	.4667	62.3	67.7	67.4	66.80	+ 3.48	.446	.613	.632	.567	79	90	94	86	N N E	E	S W b S	N 53 W	3.0	7.0	8.0	0.63	7.58	.662	...
M	29.6682	29.6354	29.6271	29.6440	60.87	74.25	64.59	67.18	+ 1.42	.434	.487	.456	.469	80	58	74	70	.....	.....	.....	.....	3.33	10.18	5.11	.....	6.15	1.562	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR AUGUST, 1868.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....29.915 at 8 a.m. on 27th.
Lowest Barometer.....29.220 at 4 p.m. on 8th. } Monthly range= 0.695 inches.

Self-registering Ther.
- Maximum Temperature .....84°4 on 14th.
- Minimum Temperature .....46°8 on 13th. } Monthly range= 37°6.
- Mean Maximum Temperature .....76°91.
- Mean Minimum Temperature .....58°17. } Mean daily range= 18°74.
- Greatest daily range.....83°7 from a.m. to p.m. of 13th.
- Least daily range .....11°6 from a.m. to p.m. of 27th.

Warmest day.....29th....Mean Temperature.....72°86.
Coldest day .....17th....Mean Temperature.....54°07. } Difference=18°81.

Maximum Radiation.
- Solar .....99°0 on 14th.
- Terrestrial .....34°4 on 13th. } Monthly range= 64°6.

Aurora observed on 2 nights, viz.: 9th and 11th.
Possible to see Aurora on 20 nights; impossible on 11 nights.
Raining on 13 days; depth 1.562 inches; duration of fall 26.4 hours.
Mean of Cloudiness=0.55.
Most cloudy hour observed 4 p.m.; Mean=0.65; least cloudy hour observed 10 p.m.; Mean=0.39.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1262.53	1658.21	1039.57	1678.94

Resultant Direction S. 58° W.; Resultant Velocity 1.01.
Mean Velocity 6.15 miles per hour.
Maximum Velocity 22.1 miles, from 4 to 5 p.m. of 15th.

Most Windy day 8th; Mean Velocity 10.47 miles per hour.
Least Windy day 24th; Mean Velocity 2.06 miles per hour. } Difference 8.41 miles.

Most Windy hour 2 p.m.; Mean Velocity 10.23 miles per hour.
Least Windy hour 5 a.m.; Mean Velocity 3.41 miles per hour. } Difference 6.82 miles.

8th, thunder storm, a.m. 15th, thunder storm, p.m.
20th, thunder storm, noon. 31st, thunder storm, p.m.
28th, rainbow at 6 p.m. Solar haloes on the 21st and 24th.

COMPARATIVE TABLE FOR AUGUST.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Vel'y	Mean Velocity.
	°	°	°	°	°					°		
1849	64.7	— 1.4	82.4	47.7	34.7	12	2.905	...	...	...	...	...
1841	64.4	— 1.7	84.8	45.7	39.1	9	6.170	...	...	...	...	0.19 lbs
1842	65.7	— 0.4	81.8	43.9	37.9	6	2.500	...	...	...	...	0.30
1843	66.4	+ 0.3	83.1	44.0	39.1	4	4.850	...	...	...	...	0.12
1844	64.3	— 1.8	86.8	43.5	43.3	17	imper.	...	...	...	...	0.16
1845	67.9	+ 1.8	84.8	41.5	43.3	9	1.725	...	...	...	...	0.19
1846	68.4	+ 2.3	86.4	49.5	36.9	9	1.770	...	...	...	...	0.17
1847	65.1	— 1.0	82.6	44.6	38.0	10	2.140	...	...	...	...	0.19
1848	69.2	+ 3.1	87.0	48.7	38.3	8	0.855	...	...	S 21 E	0.98	4.55 m.
1849	66.3	+ 0.2	79.0	49.0	30.0	10	4.970	...	...	N 71 W	0.60	3.76
1850	66.8	+ 0.7	85.0	41.0	44.0	13	4.355	...	...	N 15 E	0.35	4.46
1851	63.6	— 2.5	79.8	42.0	37.8	10	1.360	...	...	N 63 W	0.40	4.63
1852	65.9	— 0.2	81.2	45.8	35.4	9	2.605	...	...	N 70 E	0.56	3.80
1853	68.6	+ 2.5	94.9	42.5	52.4	11	2.575	...	...	S 36 E	0.30	4.26
1854	68.0	+ 1.9	99.2	45.6	53.6	5	0.455	...	...	N 64 W	1.76	4.60
1855	64.1	— 2.0	83.5	40.0	43.5	7	1.455	...	...	N 63 W	1.04	6.97
1856	63.6	— 2.5	82.7	41.5	41.2	12	1.680	...	...	N 50 W	2.88	7.03
1857	65.3	— 0.8	88.2	46.0	42.2	13	5.285	...	...	N 77 W	1.51	6.36
1858	67.6	+ 1.5	84.0	44.0	40.0	11	3.890	...	...	N 69 W	1.57	6.50
1859	66.6	+ 0.5	82.2	45.8	36.4	11	3.900	...	...	N 36 W	1.62	5.96
1860	64.5	— 1.6	87.0	46.8	40.2	14	3.405	...	...	N 70 W	1.83	5.80
1861	65.5	— 0.6	85.2	47.0	38.2	15	2.953	...	...	N 8 E	0.46	4.21
1862	67.6	+ 1.5	89.5	42.8	46.7	15	3.483	...	...	N 78 W	1.67	5.96
1863	66.6	+ 0.5	88.0	42.4	45.6	12	2.208	...	...	S 61 W	1.80	4.89
1864	68.6	+ 2.5	94.0	47.0	47.0	16	5.060	...	...	N 70 W	1.38	4.75
1865	65.2	— 0.9	87.8	44.4	43.4	8	1.990	...	...	N 60 W	1.55	5.07
1866	60.8	— 5.3	77.0	42.4	34.6	14	4.467	...	...	N 59 W	2.58	5.16
1867	68.1	+ 2.0	95.2	42.2	53.0	10	2.440	...	...	N 76 W	1.25	4.52
1868	67.2	+ 1.1	84.4	46.8	37.6	13	1.562	...	...	S 58 W	1.01	6.15
Results to 1867.	66.05	...	85.82	44.54	41.28	10.71	3.022	...	...	N 66 W	1.06	5.14
Excess for 1868	+ 1.15	...	— 1.42	+ 2.26	— 3.68	+ 2.29	— 1.460	...	...	...	...	+ 1.01

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THE CANADIAN JOURNAL.

NEW SERIES.

No. LXIX.—JULY, 1869.

RICARDUS CORINENSIS:

A LITERARY MASKING OF THE EIGHTEENTH CENTURY.

BY DANIEL WILSON, LL.D.,

Professor of History and English Literature, University College, Toronto.

Mr. Richard Gough, in his introduction to the "Archæologia," which was destined to be the enduring repertory of English Antiquities, labours to establish a becoming age for the Society of Antiquaries itself. According to him, that brotherhood of antiquarian devotees had its origin in the great era of religious and intellectual revolution to which Queen Elizabeth's name is fitly applied, when men of the highest intellect, possessed by the new ideas of the age, were struggling for the world's emancipation from the thraldom of antiquity. In the year 1572, a few eminent English scholars, under the auspices of Archbishop Parker and Sir Robert Cotton, assembled at the house of the latter, and formed themselves into a society for the preservation of the ancient monuments of their country. The British Museum Library is the enduring memorial of the labours of one of those conservators of national antiquities, in an age of revolution. But it is to a far different age, and to a very diverse reign, we must turn, for the actual foundation of the Society of Antiquaries. Not in the earnest, progressive era of Queen Elizabeth, but in that most unearnest of centuries with which Queen Anne's name is fitly associated: a body of gentlemen, not less zealous, though of far inferior note to their precursors of the sixteenth

century, began their meetings, in 1708, in the Young Devil Tavern, Fleet Street, London; and established a society for the study of antiquities, which has since rendered valuable service to letters and national history. It was not, however, till 1718, that they were thoroughly organised, with a staff of office-bearers, and a regular record of their proceedings. But from this we learn that their first President was Peter Le Neve, Esq., Norroy King-at-Arms, and their first Secretary Dr. William Stukeley, a fitting type of the antiquarian enthusiast of that eighteenth century. He was still a layman, a Fellow of the College of Physicians, devoted to the study of the natural sciences, a zealous botanist, an ingenious experimenter in chemistry, and an active cooperator in many curious anatomical dissections, with Stephen Hales, a fellow member of Corpus Christi College, Cambridge.

Dr. Stukeley settled in his native county of Lincolnshire as a medical practitioner, and acquired considerable professional reputation. But soon after he reached his fortieth year, his own health began to fail; and, on the persuasion, it is said, of Archbishop Wake, he abandoned the medical profession and took orders. Soon after, in 1729, he was presented, by the Lord Chancellor King, to the living of All Saints, in Stamford; and thenceforth he devoted his leisure to the gratification of his favourite taste for antiquarian research. Much of his spare time had been given to such studies even in earlier years, when his professional training, and the bent of his friend Hales' tastes, tempted him in other directions. So early as 1720, he published "An Account of a Roman Temple, and other Antiquities near Graham's Dike, in Scotland:" said "Roman Temple" being the famous Arthur's Oon, a singular bee-hive structure of squared masonry, twenty-eight feet in diameter, and with all its characteristics pointing to a very different age than that in which Roman temples were reared. A hint of the Scottish historian George Buchanan, sufficed for the theory that it was the *Templum Termini*, a sacellum reared on the limits of Roman rule. Dr. Stukeley giving his imagination full play, conceived of it as the work of Agricola, and dedicated to Romulus, the parent deity of Rome; and in his enthusiasm pronounced it to be a fac simile of "the famous Pantheon at Rome, before the noble portico was added to it by Marcus Agrippa." Other works followed in the same vein, dealing with Stonehenge, Abury, the Druids, and British antiquities in general. He could use his pencil, as well as his pen, with facility; and grudged no outlay in the issue of copiously illustrated folios and quartos, according

to the fashion of that age. Hence his reputation was extended far and wide, as one foremost among the antiquarian authorities of his day.

But Stukeley's day was one in which antiquarian zeal was little tempered by critical judgment. The historian Gibbon, while turning to account his "Medallic History of Marcus Aurelius Valerius Carausius, Emperor of Britain," adds in a note: "I have used his materials, and rejected most of his fanciful conjectures." Few writers have more widely differed in every mental characteristic, than the calm, philosophic, sceptical historian of "The Decline and Fall of the Roman Empire," and the fanciful, credulous, but enthusiastic author of the "Itinerarium Curiosum." He visited Oxford, in September, 1724, and one of its fellows, Thomas Hearne, has recorded the fact in his Diary, with this comment on his brother antiquary: "This Dr. Stukeley is a mighty conceited man, and it is observed by all I talked with that what he does hath no manner of likeness to the originals. He goes all by fancy. . . . . In short, as he addicts himself to fancy altogether, what he does must have no regard among judicious and truly ingenuous men." A biographer in the "Penny Cyclopædia" sums up his character in this fashion: "No antiquarian ever had so lively, not to say licentious a fancy as Stukeley. The idea of the obscure, remote past, inflamed him like a passion. Most even of his descriptions are rather visions than sober relations of what would be perceived by an ordinary eye; and never, before or since, were such broad continuous webs of speculation woven out of little more than moonshine." An amiable enthusiast himself, he was well fitted to maintain in friendly cooperation the fellowship of antiquaries who, in that eighteenth century, set themselves to work, with characteristic enthusiasm, on coins, medals, seals, ancient monuments, records, rolls, genealogies, and manuscripts of all sorts; and was specially noticeable among the antiquarian fraternity, as one to whom a novice in the craft might turn for sympathy, without much danger of being troubled by critical doubts or questionings as to the genuineness of any plausible antique submitted to him. He was accordingly selected, in due time, as the confidant of an antiquarian discoverer, of a type peculiar to that eighteenth century; and has since owed his chief fame to the part he bore in the marvellous literary disclosure.

In the year 1743, in which Dr. Stukeley published his learned folio on "Abury, a Temple of the British Druids," the Princess Louisa, youngest daughter of George II., was married, at the age of nineteen,

to Frederick, Crown Prince of Denmark, who, within less than three years thereafter, succeeded his father on the throne of Denmark and Norway, by the title of Frederick V. The English princess won universal good-will by her simple, unaffected manners, in striking contrast to the exclusiveness and formal etiquette which had prevailed during the previous reign. She gave an heir to the throne, in the Crown Prince, afterwards Christian VII.; but within two years the Danes had to lament her death, in giving birth to another son.

Among the attendants who constituted the retinue of this royal daughter of England, there went to Copenhagen one Bertram, a silk dyer, and with him, if not earlier, his son, Charles Julius, a youth who by-and-by achieved for himself, in very questionable fashion, a notable reputation among European scholars.

The age was one of much literary ingenuity, and of not a little successful imposture. The prevailing ideas in reference to historical evidence were so vague and crude, that the most barefaced literary frauds obtained ready acceptance even among scholars and critics; and their exposure brought little or no discredit on their perpetrators. One well-known example of literary masquerading will suffice to illustrate this curious phase of the eighteenth century. Lady Wardlaw, of Pitreavie, the wife of a Scottish Baronet, found, according to her own account, in a vault of Dunfermline Abbey, or elsewhere, an ancient manuscript containing the greater part of the heroic ballad of "Hardyknute." This was published in 1719 as a genuine antique, at the joint expense of Lord President Forbes and Sir Gilbert Elliot, of Minto; and figured at a later date, in Percy's "Reliques of Ancient English Poetry," as "a Scottish fragment: a fine morsel of heroic poetry." After a time some less credulous critics began to suspect the modern authorship; and Lady Wardlaw, without distinctly admitting it, practically confirmed their judgment by producing additional stanzas. Still later, Lord Hailes—who had persisted in the opinion that the ballad was ancient, though retouched and much enlarged by its professed discoverer,—is said by Bishop Percy to have communicated extracts of a letter from Sir John Bruce, of Kinross, the year after his death in 1766, "which plainly proved the pretended discoverer of the fragment of *Hardyknute* to have been himself." According to the earlier account, Lady Wardlaw "pretended she had found this poem, written on shreds of paper employed for what is called the bottoms of clues." But Lord Hailes furnishes this quotation from the letter asserted to

have been addressed by Sir John Bruce to Lord Binning: "I send you a true copy of the manuscript I found some weeks ago in a vault at Dunfermline. It is written on vellum, in a fair gothic character, but so much defaced by time, as you'll find, that the tenth part is not legible." Sir John Bruce, a brother-in-law of Lady Wardlaw, was already in his grave, so no questions could be asked. Whoever penned the extract, most probably meant nine-tenths, when he referred to "the tenth part." But to whomsoever its authorship be ascribed, the letter was not more genuine than the parchment it referred to.

The poem itself had long before issued from the press of James Watson, of Edinburgh, in the form of a twelve page folio tract; but later editions include additional stanzas, over and above those first produced by Lady Wardlaw in practical acknowledgment of her title to the authorship of the whole. To the versatile pen of this little-heeded Scottish poetess, Dr. Robert Chambers has since ascribed the production of "Sir Patrick Spens," "Gil Morrice," "Young Waters," "Gilderoy," and others: the cream of Scottish ballads, hitherto regarded as genuine antiques, and printed by Percy as such, though not always without unacknowledged patchings, or variations and additions on the authority of his ancient folio MS.

Or let us take an example among the foremost critics of that day. The hero of the "Dunciad," Lewis Theobald, had his revenge on his satirist, by publishing a critical edition of Shakespeare's dramas which completely eclipsed that of Pope, and is still recognised as a valuable addition to Shakesperian textual criticism. But in 1728, he printed, as a genuine play of Shakespeare, recovered from an original manuscript: "The Double Falsehood," a worthless production, which was nevertheless introduced on the stage, and received with general admiration. The following passage, so foreign alike to the style and rhythm of Shakespeare, was specially singled out for general commendation:—

> "Strike up, my masters;
> But touch the strings with a religious softness;
> Teach sound to languish through the night's dull ear,
> Till melancholy start from her lazy couch,
> And carelessness grow convert to attention."

The vanity of the real author was not proof against the seductive applause lavished on these choice lines. He confessed that they were his own, but at the same time persisted in accrediting Shakespeare with the rest. The title of "The Double Falsehood" most aptly pre-

serves the memory of this characteristic incident in the history of the literature of a period, when vanity, and a craving for notoriety on any terms, gave birth to a singular brood of literary bastards.

In striving to elucidate the literary history of that period, the modern editor gets more and more confounded between his reluctance to believe that Lords and Ladies, Bishops, Scholars, Knights and Lord Justices, deliberately penned forgeries, and persisted in contradictory falsehoods: and the impossibility of deducing from their statements any honest version of their story. Theobald, Macpherson, Walpole, Chatterton, and others of minor note, all excited the interest of credulous contemporaries by the same means, until such forgeries of the eighteenth century have come to constitute a highly characteristic department of the literature of that age.

Young Bertram left England in the suite of the Princess Louisa, at a time when such spurious offspring of antiquarian zeal found everywhere an undoubting welcome. "Hardyknute" was then in as high esteem as the "Nibelungen Lied" was destined to be; though the first instalment of that genuine Germanic Iliad, printed in 1757, attracted little attention. For years after, whatever interest he maintained in the literature of his native land, was rewarded by the perusal of ballads, heroic epics, and other products of the same mint, possessing at times genuine merit of their own; but deriving a fictitious value, to which their chief importance was due, from some romantic story of recovered parchment, or antique record. There was nothing of the poet in the boy: or a Norse Saga, after the model of "Hardyknute," would have been the fittest discovery among the archives of Copenhagen; but he had the ambition to rank among the discoverers of his day, and achieved his triumph in a more enduring fashion. The genuineness of his professed discovery remained unchallenged for nearly a century, nor is it wholly discredited even now. But its reputation was chiefly associated with its English editor, and little can be ascertained relating to its discoverer, beyond what Dr. Stukeley has put on record. Slight, however, as are the additions recoverable, they are sufficient to give a novel aspect to the history of the most mischievous of all the literary forgeries of the eighteenth century.

When the boy-poet Chatterton set to work, after the fashion of his age, on the creation of fifteenth century epics and interludes, his old poet-priest, Rowley, was as genuine an offspring of his invention as the poems ascribed to his pen. But the imaginative faculty was weak in

Bertram; and it better suited the purpose he had in view to invent, for an actual chronicler of the fourteenth century, the spurious contribution to Roman history, which, with the aid of his name, obtained such universal and enduring credence.

In the year 1350, when Abbot Nicholas de Lythington ruled over the Benedictine Monastery of St. Peter, Westminster, Richard of Cirencester, a native of the ancient city in Gloucestershire from whence his name is derived, entered that Monastery, at an early age. Hence, when the fame of his literary labours had given importance to his name, he was sometimes referred to as the Monk of Westminster. Nothing is known of his family; though it has been inferred from the education he had received, in an age when facilities for the attainment of any high intellectual culture were beyond the reach of the people at large, that his relatives must have belonged to a superior rank in society. Education, however, was then exclusively in the hands of the Church; and he may have been admitted to the enjoyment of its advantages in return for his own eager desire for knowledge. His name occurs in documents of various dates, pertaining to the monastery, up to the closing year of the century. He obtained in 1391, a licence to visit Rome, from Abbot William, of Colchester, who records therein the virtues and piety of the literary monk, and his regularity in fulfilling all the requirements of Benedictine rule. He appears to have been an inmate of the Abbey infirmary in 1401, where he died in that or the following year; and doubtless his ashes lie in the neighbouring cloisters, outside that Poet's Corner to which the ambition of England's later generations of literary men turns in seeking for death's rarest honours. The genuine historical work of Richard of Cirencester is his "Speculum Historiale de Gestis regum Angliæ." His other authentic works are theological: his "Tractatus super Symbolum Majus at Minus;" and his "Liber de Officiis Ecclesiasticis." But whatever rightful merit pertained to him, has been eclipsed by the spurious reputation which has attached to his name since the middle of the eighteenth century, as a monk of such enlightened zeal, as to have ransacked the libraries and ecclesiastical establishments of England, and explored its ancient remains, with a view to the elucidation of Roman Britain.

The fault of the Tractate, viewed simply as an ingenious invention, is that it is too good for what it professes to be. To Whitaker, Roy, Pinkerton, Chalmers, and all later Roman antiquaries, the idea of

being able to retrace the Watling, Iknield, or Ermyn Street, and review their favourite objects of study under the guidance of an intelligent observer of the fourteenth century, was possessed of too fascinating a charm to be lightly rejected. Dr. Bruce searches in vain for any trace, along the line of the Roman Wall, of what was abundantly manifest to Horsley little more than a century before. What would he not give to know how it looked to the eyes of the good monk, Richard, in the year 1350, before the waste of five centuries had done its work. To all appearance this was the grand consummation actually achieved for English antiquaries by the discovery at Copenhagen, in 1747, of the MS. treatise "De Situ Britanniæ," to which Richard of Cirencester has ever since owed his celebrity. If he did surpass himself, it was due to the virtue of his theme and the character of his guides. Whitaker thus expresses the feelings begot in his mind by a comparison of the novel treatise with Richard's genuine history of Britain from the days of Hengist: "the hope of meeting with discoveries as great in the British and Saxon history, as he has given us concerning the previous period, induced me to examine the work. But my expectations were greatly disappointed. The learned scholar and the deep antiquarian I found sunk into an ignorant novice, sometimes the copier of Huntingdon, but generally the transcriber of Geoffrey. Deprived of his Roman guides, Richard showed himself as ignorant and as injudicious as any of his illiterate contemporaries about him." Yet for all this, not the slightest suspicion of fraud seems to have suggested itself to the acutest of such critics.

Dr. Stukeley was still residing at his Lincolnshire parsonage, when, as he tells us, in the summer of 1747, he "received a letter from Charles Julius Bertram, Professor of the English tongue in the Royal Marine Academy of Copenhagen, a person unknown to me. The letter was polite, full of compliments, as usual with foreigners; expressing much candor and respect to me: being only acquainted with some works of mine published. The letter was dated the year before; for all that time he hesitated in sending it. Soon after my receiving it, I sent a civil answer; which produced another letter, with a prolix and elaborate Latin epistle enclosed, from the famous Mr. Gramm, privy-counsellor and chief librarian to his Danish Majesty: a learned gentleman who had been in England, and visited our Universities. He was Mr. Bertram's great friend and patron. I answered that letter, and it

created a correspondence between us. Among other matters, Mr. Bertram mentioned a manuscript, in a friend's hands, of Richard of Westminster, being a history of Roman Britain, which he thought a great curiosity; and an ancient map of the island annexed."

Nothing could be better devised for securing a reception to the reputed discovery. Every nook and cranny of Roman England had already been ransacked with loving zeal by the Lincolnshire antiquary; imagination had been called in where facts failed, to eke out a coherent narrative; but still much remained obscure. But here was the politely appreciative foreign savant, full of respect for the Doctor and praise of his works; and, in the midst of all his pleasant "candour and respect," dropping incidentally the hint of a recovered history of Roman Britain, as it presented itself to the eyes of an antiquarian brother of the Benedictine Monastery of St. Peter, in the year 1350, with all that the waste of five centuries had since defaced and obliterated.

Soon after the receipt of Bertram's first letter, Dr. Stukeley was presented to the Rectory of St. George the Martyr, Queen Square, London; and so was permanently established within easy access to his favourite literary associates, whose meetings were now held in the Mitre Tavern, Fleet Street, until their removal, in 1753, to a house of their own in Chancery Lane. The stimulus of such society speedily manifested its influence. He had not, apparently, while resident at Stamford, fully appreciated the advantages of a history of Roman Britain, as studied by an observer of the fourteenth century; or been, as he says, "solicitous about Richard of Westminster." But, as he writes in 1747, "in November, that year, the Duke of Montagu, who was pleas'd to have a favour for me, drew me from a beloved retirement, where I proposed to spend the remainder of my life;" and so he goes on to state: "when I became fix'd in London, I thought it proper to cultivate my Copenhagen correspondence, and I received another Latin letter from Mr. Gramm; and soon after an account of his death, and a print of him in profile."

Of his Danish Majesty's privy-counsellor and chief librarian, a word or two more may be needful before the close; but it was not till after the news of his death that the correspondence with Bertram was renewed, and his great literary discovery actually transcribed. The discussions with the Gales, Talman, Vertue, and other antiquaries at the Mitre meetings, soon fanned the old zeal into renewed fervour; and, as Dr. Stukeley tells us, he "began to think of the manuscript, and desired

some little extract from it; then an imitation of the hand-writing, which I showed to my late friend, Mr. Casley, Keeper in the Cotton Library, who immediately pronounced it to be 400 years old. I pressed Mr. Bertram to get the manuscript into his hands, if possible; which at length, with some difficulty he accomplished; and on my solicitation sent me, in letters, a transcript of the whole, and at last a copy of the map: he having an excellent hand in drawing. Upon perusal, I seriously solicited him to print it, as the greatest treasure we now can boast of in this kind of learning."

The date of the reception of the completed transcript and map, we learn from Dr. Stukeley's Journal, extracts from which appeared in the *Gentleman's Magazine* for August, 1835. He thus writes, under date, March 1st, 1748–9: "I rec'd from my friend, Mr. Bertram of Copenhagen, a copy of his curious MS. of *Ric'us Westmonasteriensis* with the map—t'is a most valuable curiosity to the antiquitys of Brittan, being compiled out of old manuscripts in Westminster Library, now lost;" and by the 31st of the same month he is able to record in his journal: "I finished the translation of *Ricardus Westmonasteriensis*."

Whatever may have been the cause of Dr. Stukeley's indifference on first receiving Bertram's hint of his reputed discovery, his zeal now became unbounded; and the reception of his labours by European scholars and historians left him no reason to doubt that it was expended in a worthy cause. In 1757, he published the "Itinerary," with an abstract of the remaining portions of the work. In professed obedience to his urgent entreaties, Bertram himself, in the following year, put the whole to press, and published at Copenhagen, a volume in which Richard figures alongside of Gildas and Nennius, under the title "Britannicarum Gentium Historiæ Antiquæ Scriptores tres: Ricardus Corinensis, Gildas Badonicus, Nennius Banchorensis, &c." The book was in immediate demand, and, if only genuine,—which nobody then doubted,—well merited the most careful study.

The Itinerary contains eighteen Iters, professedly compiled by Richard from certain fragments written by a Roman General,—supposed by Stukeley, in defiance of all possibilities, to have been Agricola;—and from Ptolemy and other authors. Richard, indeed, in a style wonderfully unlike that of a monkish historian, takes credit to himself for having altered the work, as he hopes for the better, with their assistance. The Itinerary of Antoninus, the most ample record on the subject, contains references to one hundred and thirteen Roman stations, while

Richard mentions one hundred and seventy-six. To the Scottish antiquary his additions are peculiarly tempting: for he fills up the whole map of Roman Scotland to the Moray Firth, and plants a municipium on the site of Inverness. No wonder that the Copenhagen edition soon became scarce. A third edition, forming part of Dr. Stukeley's "Itinerarium Curiosum" in two amply illustrated folio volumes, was issued after his death. In 1809, Hatcher published another edition, with a translation, commentary, maps, and fac-simile of the MS. A reprint of this followed in 1841; and so recently as 1848, it was once more reproduced, as one of "Six Old English Chronicles," edited, with illustrative notes, for "Bohn's Antiquarian Library," by J. A. Giles, D.C.L., late Fellow of Corpus Christi College, Oxford: without a hint of any suspicion of its genuineness.

The time for challenge had seemingly gone by. Authenticated by Gibbon and other historians; by Whitaker, Roy, and the whole fellowship of antiquaries: it seemed befitting later editors to elucidate the text, with no further challenge than consisted with the probable shortcomings of a monkish antiquary of the middle ages. Yet the history of the original discovery curiously illustrates the uncritical credulity of that eighteenth century. Bertram, an unknown foreigner, informed Stukeley of the MS. as then "in a friend's hand." By-and-by he is able to state that, not without some difficulty, it has been transferred from its nameless owner to himself. His friend and patron, the privy-councillor Gramm, possibly left on the mind of Dr. Stukeley the impression, after perusal of his "prolix and elaborate Latin epistle," that he had seen it. But the privy-councillor died before the MS. was transcribed; Bertram himself died in 1765, and nobody from that day till this ever saw it, or heard of any one who had done so.

Nevertheless, this work continued, for nearly a century, to be regarded among British scholars as the indispensable hand-book of the Roman antiquary, and still forms a part of some of his most useful text-books. Mr. Ackerman has printed it in his "Archæological Index," as the legitimate sequence to Ptolemy, Antoninus, and the Notitia. Still later, Mr. Thomas Wright has followed his example, and in the appendix to his "Celt, Roman, and Saxon," after giving the portion of the Antonine Itinerary relating to Britain, he adds in succession the "Itinerary of Richard," and the "Ravenna List." When his edition of 1852 appeared, the authority of Richard's Tractate had become matter of discussion, and so the author inserts a saving clause to lighten

his critical responsibility. Richard's description of Britain, he says, "appears to be made up of very discordant materials. How much was really the work of a monk of Westminster, and how much we owe to the modern editor, Bertram of Copenhagen, it is not easy to say, for the manuscript has very strangely disappeared. It appears, however, that the old monk had before him a Roman itinerary similar to that of Antoninus, or perhaps a map, from which he extracted the part relating to Britain. That this Itinerary was not invented by Bertram seems clear from the circumstance that his roads, though they are not always the same as those in Antoninus, have been traced where he traces them, and that their existence was certainly not known in Bertram's time;" and so having thus asserted the genuineness of the Itinerary, he proceeds to insert it as the legitimate link between that ascribed to Antoninus Augustus, assigned to A.D. 320, and another derived from the Cosmography of the anonymous writer of Ravenna, compiled not later than the seventh century.

This process of inserting the spurious document between two genuine ones was first adopted by Bertram himself; and, while the authentic Gildas and Nennius, selected by him for the purpose, gave an air of genuineness to their new found associate; the reputed monkish antiquary of the fourteenth century appeared to no slight advantage alongside of those credulous Celtic chroniclers. But, in reality the forging of such an Itinerary as Bertram produced required neither learning nor ingenuity. "It appears that the old monk had before him a Roman itinerary similar to that of Antoninus," says the author of the "Celt, Roman, and Saxon," and so it "seems clear" to him that Bertram could not have invented it. But what if Bertram, himself, had the Antonine Itinerary before him, along with any map of Roman Britain, the feat of making such a one as he produced to Dr. Stukeley lay within the compass of any ordinary school boy's capacity for invention. The Itinerary is nothing more than a series of local names, arranged in columns, in geographical sequence, with the distances in thousand paces, stated in Roman numerals: though this indispensable requirement of an itinerary is omitted by Richard whenever he is in more than usual uncertainty; or, as Mr. Thomas Wright says: "The text of Richard's Diaphragmata is in some parts imperfect, from the damaged state of the manuscript." In reality the whole *Iter Britanniarum* of Antoninus is engrafted into Richard's Itinerary, with the exception of less than a dozen towns. The series are broken occa-

sionally, and sometimes inverted; but just where the measurements of new roads are in request the manuscript is sure to fail. But indeed the only manuscript ever ascertained to have been seen by Danish or English antiquary is the Bertram correspondence with Dr. Stukeley. Its transcriber was not even put to the trouble of rendering his iters in fourteenth century characters.

The manuscripts of Antoninus are numerous; but the discrepancies in the distances given in different MSS., consequent on the liability to error in the transcription of arbitrary numerals, greatly detract from its value; so that a genuine itinerary of later date, with trustworthy admeasurements; or even an accurate transcript of an early manuscript of the *Itinerarium* ascribed to Antoninus, would be an important addition to Roman geography. No one, however, has pretended to accredit Richard with this virtue; but in lieu of it, he is appealed to for novel additions to the elder itinerary.

"Two imperfect itineraries," says Mr. Thomas Wright, "giving the names and distances from each other of the towns and stations on the principal military roads, have been preserved." The first of these is that of Antoninus; "the other is contained in the work of Richard of Cirencester, and is supposed to have been copied by a monk of the fourteenth century, from an older itinerary or map. They differ little from each other; but our faith in Richard's Itinerary is strengthened by the circumstance that nearly all the roads he gives which are not in Antoninus have been ascertained to exist." The ground of faith, thus indicated, in Richard, is vague enough when analysed; for the most he has done is to supply a string of names, with, or without specific distances, between certain well-known Roman towns. Enthusiastic antiquaries have done the rest. The names supplied by him have been appropriated to sites of Roman camps, stations, or traces of earth-works of any kind: but while the names in the *Notitia* have been repeatedly localised by their discovery on inscribed altars and tablets, or on vessels, such as the famous bronze Rudge Cup: no single name among all the places mentioned for the first time in Richard's Itinerary has been verified by such means. Without this, the appropriation of his names to intermediate points between well-ascertained Roman stations can furnish no corroboration of his text.

Nevertheless, the foremost authorities among Roman antiquaries of our own day have been no less ready than General Roy was, a century before, to adopt Richard as their guide. The history, indeed, of the

eager reception,—without one dissentient voice,—of a professed manuscript of the fourteenth century, unheard of before; unseen, so far as now appears, by anybody; and ascribed to a monk whose chronicle and theological writings were well known; but whose name had never before been heard of in connection with so remarkable a work: is highly interesting as an illustration of the crude ideas as to literary or historical evidence which then prevailed.

As to Dr. Stukeley, his delight at the discovery of the treasure he had been privileged to introduce to the learned world was unbounded. Apologising for the short-comings of his earlier labours and researches in the field of Britanno-Roman antiquities, he thus introduces the new-found luminary by whose beams all doubt and obscurities are to be dissipated: "the more readily, therefore, I can excuse myself, in regard to imperfections in that work [the *Itinerarium Curiosum*], as I had not sight of our author's treatise, Richard of Cirencester, at that time absolutely unknown. Since, then, I have had the good fortune to save this most invaluable work of his, I could not refrain from contributing somewhat toward giving an account of it and of its author:" and so—after once more felicitating himself and all who share in his literary and antiquarian sympathies, on having reason to congratulate themselves "that the present work of Richard is happily rescued from oblivion, and most likely from destruction;"—he proceeds to narrate the mode by which his knowledge of it was acquired.

The "*De Situ Britanniæ*" was recognised from the first as a compilation; was indeed professedly set forth by its author as such. "Compiled out of old manuscripts in Westminster Library, now lost," says Dr. Stukeley; "the old monk had before him a Roman itinerary similar to that of Antoninus," says Mr. Thomas Wright. Of ancient authors he, of course, makes use. Diodorus, Pliny, Cæsar, Tacitus, &c., are quoted: and with such minute accordance with certain texts—as we shall find,—as to furnish very amusing anachronisms for a monk of the fourteenth century. Solinus, the Latin geographer, is followed *verbatim* in the opening sentence, as elsewhere, without reference or acknowledgement. That, however, an old monk might perhaps be allowed to do without challenge. But when he betrays a like familiarity with Camden; reproduces hints of Horsley; and even suggests a suspicion whether he may not have been a borrower from Stukeley himself: any faith in the authenticity of an ancient manuscript of the *De Situ Britanniæ*, becomes impossible.

A school of Roman antiquaries, however, was at work in that eighteenth century. with much learning and zeal, but with still more credulity. Sir Walter Scott has pictured them with graphic humour in his immortal Antiquary, with his "Essay upon Castrametation, with some particular remarks upon the vestiges of ancient fortifications lately discovered by the Author at the Kaim of Kinprunes:" the supposed *Castra pruinis* of Claudian. Agricola was the central figure of all their speculations; and Tacitus the authority on whose narrative their discoveries and speculations were ever throwing new light. In the midst of such seductive toils, the discovery of Richard's manuscript, was like the lost books of Livy to the historian of early Rome. The acutest among the critical investigators of the age—though engaged in controversies carried on with a bitterness happily unknown to modern literary dissentions,—concurred in welcoming the Benedictine's Itinerary; and so ingeniously adapted its vaguest hints to their own speculations and discoveries, that for nearly three quarters of a century, no doubt, was raised as to Bertram's good faith in the reputed discovery.

Foremost among those who thus gave confirmation to Richard's treatise on ancient British geography, by identifying its iters and stations with their own discoveries, was the distinguished author of "The Military Antiquities of the Romans in North Britain." Major-General Roy had served as an officer of engineers under the Duke of Cumberland, in his Scottish Campaign of 1745. He was employed in the surveys and military works suggested by the events of that critical period; and was subsequently commissioned to construct a map of Scotland from actual survey. In doing so he made careful and accurate drawings of Roman camps, roads, and other earth-works: the whole of which, with his descriptive narrative, furnished the materials for a costly folio printed at the expense of the Society of Antiquaries of London, in 1791, under the comprehensive title of "The Military Antiquities of the Romans in North Britain; and particularly their ancient system of castrametation: illustrated from vestiges of the camps of Agricola existing there. Hence his march from South into North Britain is in some degree traced; comprehending also a treatise, wherein the ancient geography of that part of the island is rectified, chiefly from the lights furnished by Richard of Cirencester."

The work of General Roy is, and ever will be, an invaluable contribution to the history of the period of Roman occupation of Britain. It furnishes accurate surveys of many important earth-works, since

defaced or wholly destroyed; and by associating the name of Richard with the accurate and trustworthy record of his own surveys and mensurations, the supposed monkish antiquary was presented anew to the learned world with credentials scarcely admitting of challenge by any ordinary critic.

Gibbon discriminated between the "fanciful conjectures" of Stukeley and the numismatic materials accumulated by him in his "Medallic History;" but of Richard and his "*De Situ Britanniæ*, he says: "he shows a genuine knowledge of antiquity very extraordinary for a monk of the fourteenth century." No wonder, therefore, that such historians as Lingard and Lappenberg; and a whole century of Roman antiquaries: have appealed undoubtingly to the monkish chronicler. Whitaker in his "History of Manchester," and Stuart in his "Caledonia Romana," deal with him as an undoubted and valuable authority. Ritson, the keenest of literary censors, accepts his treatise unchallenged. Roy says of him, "it is evident that Richard had borrowed very considerably from the Alexandrian geographer; yet there is one part of his work, namely, that including the *Diaphragmata* [*i. e.*, the Itinerary], which is quite new and curious, and carries along with it the appearance of being truly genuine." Nearly every English writer on Roman history or antiquities in the latter half of the eighteenth century refers to it in like fashion, as a valuable addition to the materials at his command. Stuart makes no distinction between the provinces of Roman Britain recorded in the "Notitia Imperii" and that of Vespasiana, which rests on the sole authority of Richard, and spread, according to the author of the "*Caledonia Romana*," "from the barrier of Antoninus northward, and was bounded, as is supposed, by the great valley through which now passes the Caledonian Canal;" so also Mr. Charles Roach Smith, one of the most zealous among the Roman antiquaries of our own day, uses Richard's Itinerary as a safe guide to Roman Britain; and in his excellent work devoted to "the Antiquities of Richborough, Reculver, and Lyme, in Kent," unhesitatingly employs him to correct, or supplement the geography of Ptolemy, and the Itinerary of Antoninus. The latter, according to his received text, makes *Dunrobrivæ*, or Rochester, thirty-seven miles distant from *Londinium;* whilst Richard assigns only twenty-seven miles. But Mr. C. R. Smith accounts for it by assuming for the former an indirect route; and finds in "the apparent discrepancy one of the internal evidences of the authenticity of this writer."

It need not excite our wonder that what is thus set forth by the highest antiquarian authorities, is taught without hesitation in schools and colleges. The maps provided for them are supplemented with names derived from Richard's Itinerary; and the authoritative book of reference on Ancient Geography produced under the editorship of Dr. William Smith, presents to every student of Roman Britain a text in which Richard of Cirencester amends Ptolemy, overrides Tacitus, and mingles truth and fable in inextricable confusion.

The difficulties of the Romano-British antiquary have been perplexing enough; but once he fully awakes to the worthlessness of this long accepted authority, the complexities attendant on his researches will be wonderfully multiplied: when he is compelled to be on his guard in every reference to his authorities, for more than a century subsequent to the year 1748, lest he too be cheated with the chaff they have thus persistently mingled with the true grains of knowledge.

So recently as 1858, Mr. Henry MacLauchlan's "Survey of the Roman Wall" issued from the press, in fulfilment of the liberal purpose of the late Duke of Northumberland. There Richard of Cirencester is referred to, along with Nennius and Bede, without a doubt being hinted as to the one being less genuine than the other; and on the elaborately executed maps of the survey the names of Roman stations are taken as freely from Richard as from any other authority. The same is true of the maps of the Ordnance Survey; of Mr. C. C., Babbington's Map of Roman Cambridgeshire; and indeed of nearly every map of Roman Britain published during the present century.

So far, then, it is obvious that, if the "De Situ Britanniæ," ascribed to Richard of Cirencester be indeed one of the literary forgeries of the eighteenth century, produced in that age of perverse ingenuity which gave birth to Hardyknute, Ossian, Rowley, and other poetic creations of the same class: its fabricator had his abundant reward. His success is, indeed, without a parallel in the history of literary frauds: unless we go back to a time little less modern than that of the Westminster monk, when Ingulf's reputed History of his Abbey of Croyland, and its Saxon charters,—including the *Golden Charter* of Ethelbald, resplendent with illuminations wholly unknown in Saxon times;—were produced in A.D. 1415, by Prior Richard, to the discomfiture of his opponents, when prosecuting a suit in the King's Court, against those who were treating his ecclesiastical sentence of excommunication with open contempt. Hickes, in his *Dissertatio Epistolaris*, inclines to

cast the odium of their forgery on Abbot Ingulfus himself, who died A.D. 1109. Sir Francis Palgrave thinks both History and Charters no older than the end of the thirteenth, or first half of the fourteenth century. But Mr. H. T. Riley, in his "History and Charters of Ingulfus considered," (*Archæol. Journ.*) fixes on Prior Richard himself as contriver, forger, and producer of the fraudulent documents: not as a literary hoax; but as deliberately forged evidence in the prosecution of a suit in the Courts of Henry V. at Westminster.

Such legal forgeries appear to have been no less characteristic of the fourteenth and fifteenth centuries than the literary ones of Macpherson and Ireland were of their later age. Their manufacture had become a regular trade; and not only spurious Royal Charters, but even Papal Bulls, could be had to order: such as those ascribed to the Popes Honorius and Sergius I., produced by the Prior of Barnwell, as papal delegate for Pope Martin V. in 1430, and still inscribed on the Great Register of the University of Cambridge.

The History and Charters of Croyland Abbey were prepared by its prior with a graver criminal intent than the MS. of his reputed Westminster namesake. Both achieved the amplest success that their forgers could desire; but the discrediting of the former is no more than a curious question of antiquarian research, whereas the latter has not wholly ceased even now to sully the pure stream of historical evidence. Let us then review the grounds on which it has at length been displaced from its long accredited position as an indisputable authority on the traces of the Roman occupation of Britain; and follow out the researches which first cast suspicion on a treatise appealed to without hesitation from the days of Gibbon almost to our own. The Itinerary, itself, as has been already said, was a simple enough invention, though now it is the only part of the work for which any defence is attempted. The Commentary consists of two books the first of which extends to eight chapters. Book II. breaks off, in a fragmentary condition, in its second chapter. The narrative is, for the most part, prosaic enough to have proceeded from the Benedictine scriptorium; but in his seventh chapter the old monk is represented as thrown into some doubt about the profitableness of antiquarian researches. His Abbot had, it would seem, taken him to task for wasting the precious hours of life, all too brief for occupations that ought to engross the thoughts of a cloistered Benedictine, on what were only fit to delude the world with unmeaning trifles. Richard

enters on the defence of his labours in an orthodox fashion which seems about as much of an anachronism as his antiquarian zeal. He yields, however, to the good Abbot's remonstrance, lest he should indeed merit the title of an unprofitable servant, and hastens to bring his work to a close. "The following Itinerary," he says, "is derived from fragments left by a Roman General. Its order is in some instances changed, according to Ptolemy and others: it is hoped for the better;" and so he proceeds to treat of the ninety-two cities of the Britons.

Ptolemy, Antoninus, and other available authorities have been freely used and improved upon. Vespasiana, for example, is a province affirmed to have been formed in the time of Agricola out of a region to the north of the Antonine wall, conquered in the reign of Domitian; but of which Agricola's own son-in-law and biographer says nothing. Among the Roman Stations in Richard's fourteenth Iter, "Ad Isca per glebon lindum usque," is Alauna, mentioned by Ptolemy as a town of the Damnii, in Warwickshire, with its modern name of Alchester. But there is another Alchester, or Alcester, in Oxfordshire, also celebrated as the scene of Roman discoveries. The former of those is stated in Baxter's Glossary to have been called "Ellencester," by Mathew Paris; and so Richard—it might almost seem blundering over Baxter's *Glossarium Antiquitatum Britannicarum* of 1733,—makes out of the wrong Alchester his Ælia Castra; which properly belonged to a wholly different Iter. Again, the establishment of another province, that of Valentia, erected by Theodosius, about A.D. 369, is ascribed to Constantine, who died thirty-two years before. In the Ninth Iter, "Ad montem Grampium," all Scottish antiquaries were charmed with the promised identification of the famous Mons Grampius of Galgacus. But the location given to it would in no way harmonize with their theories; and, if modern critics are to be believed, monk Richard anticipated a blunder of the printing press when he adopted the popular name: for Tacitus, according to the most trustworthy MSS., wrote *Groupius*, not *Grampius*.

The first doubts cast on the authenticity of the "De Situ Britanniæ" of Richard of Cirencester, were set forth in a document issued by the English Historical Society in 1838, as reasons which guided the Council in omitting it from their republication of ancient materials of English History. But the judgment was not a unanimous one; and research was encouraged, in the hope that the discovery of an ancient manu-

script of the work might still serve to remove all incredulity. But meanwhile Dr. Carl Wex, a distinguished German scholar engaged on a revised edition of the Agricola of Tacitus, on turning to Richard for the elucidation of his text, was surprised by the discovery that the reputed occupant of a Benedictine cell in the monastery of St. Peter's, Westminster, in 1350, had systematically adopted readings traceable to an edition of Tacitus printed at Venice more than a hundred years after his time, and supplemented by the conjectural emendations of later editors. A careless compositor of A.D. 1497 for example, has in setting up the passage (cap. 16), "quod nisi Paulinus cognito provinciæ motu subvenisset," &c., repeated two letters thus, *co cognito*. The conjectural emendation by an editor of the following century of *eo cognito* was adopted as the reading of subsequent editions; and on turning to Richard, he is found to have anticipated the double blunder before compositors or typographical errors had a being! Similar examples abound. Bertram's ingenious monk of the fourteenth century has an intuitive perception of all conceivable misreadings, and anticipates everywhere the corrupt text of the seventeenth century. Cumulative evidence of this kind, by which the minutest typographical blunders, and their conjectural emendations by later editors, are all found in a professed MS. of the fourteenth century, ought to suffice as a settlement of the question. That a Westminster monk of 1350 should find Tacitus and all other classical works at his elbow, might of itself surprise us; but that he should quote the blunders of modern printers can only be reconciled with any probability by assuming the all-comprehensive misreading of 1350 for 1750.

In 1846 Dr. Carl Wex embodied the prolegomena of his edition of the Agricola of Tacitus—in so far as these refer to The Tractate on Britain,—in an article published in the *Rheinisches Museum*, at Frankfort-on-the-Maine, in which he is by no means complimentary to "Stukeleio et anglicis antiquariis," in reference to their championship of this masquerading monk of the eighteenth century.

Mr. Arthur Hussey, in 1853, drew attention, in the *Gentleman's Magazine*, to the spurious character of the work, and indicated Camden as the source of much of its materials. More recently, Mr. B. B. Woodward, the learned curator of the Royal Library at Windsor Castle, has followed out an independent series of researches no less curious and conclusive. If it surpasses every probability that a monk of the fourteenth century should be found anticipating the cumulative blunders,

and the latest misprints of ill-edited classics: the marvel is little less when he is shown to have been beforehand in like manner with the conjectures and bold hypotheses of Camden. We learn from the *Notitia Imperii* the names of the five provinces of Britain, but for the relative position or boundaries of, at least, three out of the five, we are left wholly to conjecture. Roman antiquaries have accordingly shifted their localities according to the theories they advocated; and Camden, among the rest, has his hypothesis: anticipated as a demonstrable geographical distribution of the Roman divisions of the island, in Richard's Tractate. To those he does, indeed, add *Vespasiana*, apparently as his own entirely novel contribution to Roman geography; but even this Mr. Woodward conceives to be traceable to a hint of the great Elizabethan antiquary.

Camden assumes a river *Urus* on which to place *Eburacum*, or York, but Richard already had it. Out of Ptolemy's *Trisanton* he constructs, by means of a false etymology from *Hants*, a word *Antona*, and applies it to the River Itchen; but the old monk of Westminster was before him in this ingenious blundering. Camden makes of the "Madus" of the Peutingerian Table a river, and identifies it with the Medway; the "Lemana" of elder authorities becomes with him the "Lemanus fluvius;" Richard adopts both, and adds, to complete the rivers of Cantium, the "Sturius et Dubris:" he or his *alter ego*, having mistaken the name of the town of Dover for that of a river.

These are mere illustrations of the blundering servility with which Camden's ingenious hypotheses are adopted; and his errors accepted, even to such orthographic variations as "Segontium" for "Segoncium." The examples cited by Mr. Woodward of Richard's anticipations of such conjectures and assumptions are numerous and conclusive beyond all dispute. One of the boldest of his conversions of a mere analogy into a fact will best illustrate this process of manufacture of ancient geography. Camden in support of his etymology of the name of Cornwall, says there were promontories in Crete and in the Tauric Chersonese, called *Κριοῦ μέτωπα*, because of their resemblance to the horn of a ram; and so Richard supplies us with authority for naming the British "Ram's Head" of Camden *Κριοῦ μέτωπον*.

There is some satisfaction in referring to the labours of English scholars in the exposure of a fraud on which English scholarship has expended such misplaced zeal. Yet even now, there are antiquaries of good repute who have not disavowed their faith in the antiquarian

Benedictine of the fourteenth century. The Copenhagen manuscript has utterly vanished; or rather, appears to have been mythical from the first; and no fragment, or reference to any other copy, has ever been seen or heard of. Dr. Stukeley's first idea was to secure the original for the British Museum; but Bertram had a plausible story to account for his declining either to lend or sell it, when it passed, as he affirmed, into his own hands. It was, according to him, part of a large MS. stolen out of an English library, by one who had been wild in his youth; and whose mode of showing his later penitence was that "he gave it to Bertram at Copenhagen, and enjoined him to keep it secret." On this the conjecture has been founded that the Bertram MS. may have been purloined from the Cottonian Library at the fire of 1732, carried to Copenhagen, and so made the basis of the published tractate. It is at any rate worth notice, among the other consistencies of this story, that the mode adopted by Bertram for keeping his confidant's secret was to communicate it forthwith to the most likely of all Englishmen to publish it to the world. Had this been followed up by the restoration, or even the sale, of the stolen manuscript, it would have satisfied all minds; but, as the excuse accepted by Dr. Stukeley and his contemporaries for preventing anyone obtaining a sight of the original, it reads now as the shallow invention of an impostor.

But again it is suggested by those who still cling to the possible genuineness of the Itinerary, that Bertram may have so altered, patched, and tampered with, the copy he sent to Dr. Stukeley, to adapt it to the tastes of his correspondent, that he was tempted to destroy the original. Nor is there wanting a hint on which to found such an hypothesis. Mr. Bertram's monk was introduced to Dr. Stukeley as Richard of Westminster. The Doctor thereupon betook himself to the Abbey Library, and was able to tell his Copenhagen correspondent that he had found traces enough of the old chronicler, Richard of Cirencester, a monk of Westminster; whereupon Bertram's antique MS. at once adopts the change; and its title expands into "Ricardi Corinensis Monachi Westmonasteriensis De Situ Britanniæ." The title is of a modern form; for the old monk who wrote the "Speculum Historiale" styles himself "Ricardus de Cirencestria." But the Copenhagen MS. had a wonderful adaptability; and when printed there, at Dr. Stukeley's urgent advice, in 1757, it embodied sundry variations from the text he had edited from Bertram's own transcript, including differences in the distances of the Itinerary, and a map so

unlike that engraved by Stukeley, that the latter seems a mere crude sketch preparatory to the other.

But such discrepancies, if noticed, excited no suspicion. So greatly was the work in demand, that, some eight years later another English edition was projected, and its proposed editor wrote to Copenhagen in order to procure an exact fac-simile of the original map. But Bertram had died on the 8th of January, 1765, and nobody from that day to this has been heard of who ever had a glimpse of either map or manuscript. Richard's other, and undoubtedly genuine works are traced without difficulty; but the amplest catalogues of ancient manuscripts contain no notice of that to which he owes all his modern fame.

But let us hear what one of the most diligent of modern Roman investigators has to say on his behalf. "Richard of Cirencester's *De Situ Britanniæ* has been questioned," says Mr. Charles Roach Smith, in his "Richborough;" "and Bertram, who published it, has been accused of having collected his materials from the best ancient and modern authorities, and arranged the entire work. Hatcher, in the preface to his translation, has ably combated the objections brought against the originality of the Itinerary; and in one of his letters to me, dated Salisbury, November 23, 1846, he writes: 'Captain Jolliffe kindly called my attention to the *Gentleman's Magazine*, for the observations on Richard of Cirencester. After all, they are only fighting with the wind. In my edition I gave up, long ago, his description of Britain, and his chronology, except the account of the rank held by the British towns, which was known only to our native antiquaries; and this in more instances than one. As for poor Bertram, the sneers at him are as unmerited as they are ridiculous.'" The old editor of Richard adds, "I intended once, to have set this question at rest; but that time is gone by;" and so the worthy antiquary died in the faith of Bertram's honesty, and Richard's genuineness.

But there is a confirmation, of a kind peculiarly suitable to the character of Bertram's "Richard," which has escaped the notice of his enthusiastic defenders. The very reverend Jeremiah Milles, D.D. Dean of Exeter, and President of the Society of Antiquaries of London, rendered the same pious services to "Thomas Rowlie, parish prieste of St. John's, in the city of Bristol, A.D. 1465," which Dr. Stukeley did to "Richard of Cirencester," the Benedictine monk of Westminster. Our incredulous age has come, for the most part, to believe that

Thomas Chatterton, the Bristol Bluecoat boy, was the sole author of the Rowley poems. But Dr. Milles published a very learned quarto to prove the genuineness of the apocryphal priest, and the antiquity of the marvellous charity-boy's "Ælla," "Hastings," "The Bristowe Tragedy," and the rest. The Dean did not meddle with the reputed prose works of his medieval priest. They were then in preparation for the press by a no less painstaking Bristol antiquary: Mr. William Barrett, Surgeon and F. S. A. But among the latter is a passage, which, had any unbeliever then ventured a doubt as to the genuineness of Richard's Itinerary, would have been hailed by his champions as an irrefragable confutation. It curiously illustrates the revolution of opinion in the interval, that the same evidence would now suffice, were any such needed, to confute all the voluminous arguments of Dean Milles in support of the imaginary poet-priest of the fifteenth century.

The good priest Rowley is in search of manuscripts and antiquarian treasures of all sorts, for his friend and patron, Maister William Canynge, Mayor of Bristol. But the times are full of trouble, for they are those of the wars of the Roses; and Rowley, writing from Cirencester, betrays his political sympathies. But, after a brief comment on my Lord of Warwick's unprincipled ambition, he thus passes to a more congenial theme, suited to the place from which he writes. "I have founde the papers of Fryar Rycharde: he saieth nothynge of Bristolle, albeit he haveth a long storie of Seyncte Vyncente and the Queede. His celle is most lovelie depycted on the whyte walles wythe black cole, displaieynge the Iters of the Weste." Such was the spirit of that eighteenth century; ingenious, inventive, but wholly unscrupulous as to the uses to which its ingenuity was applied.

Yet Bertram and Chatterton, though foremost among the "literary forgers" of that eighteen century, must not be classed together, as though they stood on common ground. Chatterton did indeed deceive Barrett, Milles, and many another credulous dupe; but now that his mystifications have all vanished, his priest Rowley remains as an ingenious, and harmless fiction; and his Ballads, Epics, and Dramatic Interludes take a permanent rank in the poetic literature of his age. But the *De Situ Britanniæ*, if a forgery of that eighteenth century, is not merely worthless: it is one of the most mischievous of literary impostures, reflecting disgrace on its mendacious perpetrator; and tainting with misconception and falsehood the investigations of honest

and laborious workers in an important department of historical research.

It becomes a matter of interest then, to recover any information that can now be obtained relative to this Charles Julius Bertram, Professor of the English Language at the Royal Naval School of Copenhagen; and to this I am able to make a slight contribution. In the first edition of the "Prehistoric Annals of Scotland," published in 1851, I referred to "the Monk of Westminster, whom antiquaries may be pardoned suspecting to have assumed the cowl for the purpose of disguise, being in truth a monk not of the fourteenth but of the eighteenth century." This led to a correspondence with an Anglo-Roman antiquary who was still a devout believer in Richard and his Itinerary: in consequence of which I wrote to my late friend, Professor P. A. Munch, of Christiania, the Norwegian historian, begging him to ascertain for me anything that he could from literary friends at Copenhagen relative to Bertram, or his manuscript. In his reply Professor Munch says: "I have got an answer from Mr. Werlauff about *Richardus Corinensis*, containing everything that he knows of information as to this matter. The MS. is nowhere to be found, that is sure enough. Yet Mr. Werlauff is not at all inclined to think it a forgery: an opinion which indeed surprises me very much. That Stukeley—says Mr. Werlauff,—knew the Bertram MS. already ten years before the first edition was made, appears from a letter, written by Dr. Stukeley to the celebrated Hans Gramm at Copenhagen, (dated Sept. 1, 1747,) of which letter an abridgement is given in the preface. In the original, however, the passage runs much more complete, as follows: "Bertramo tuo me commendatum facias oro, quem felicem tuo patrocinio existimo. Felicem me quoque reddidit, tuo in respectu, fragmentum suum M.SS. Ricardi mon. Westmonasteriensis. Rarum est cimelium in bibliothecis nostris ignotum. Ego non indignum censeo ut prelo committatur, opus nostris antiquariis acceptissimum." "This" adds Professor Munch, "certainly does not savour of anything like forgery or falsehood on the part of Stukeley:" an idea which no one familiar with the character of that amiable enthusiast would think of entertaining.

Mr. Werlauff inferred, from a reference in one of Bertram's papers, that he had come to Denmark some time before his father: having, according to his interpretation of that notice, arrived in Copenhagen ten years prior to 1748, "indirectly asked to come by King Christian." But, according to Worm's Lexicon of Danish Authors, Bertram was

born in 1723, and was therefore barely fifteen at the date of this supposed royal invitation. We may therefore still adhere to the more probable account that he accompanied his father, in the suite of the Princess Louisa, in 1743.

"As for Bertram," continues Professor Munch, "he seems to have been rather a worthy man. His father, a silk-dyer, is said to have immigrated into Denmark with the people and menials accompanying the English Princess Louisa. In 1744, he established himself at Copenhagen as a hosier. His son, the Bertram in question, was a student, a kind of protegé of King Christian VI. From papers in the Record Office of the Academical Council at Copenhagen, it appears that he gave in to the said Council a petition, dated 5th July, 1747, requesting that he might be inscribed as a student, although belonging to the Anglican Church. He meant to *excolere historiam, antiquitates, philosophiam, et mathesin.* On the 23rd March, 1748, he petitioned the King that he might be appointed to lecture *publice* on the English Language. There exists still in the Library at Copenhagen a fragment of Bertram's treatise on Cnut the Great;" and it may be added that the literary characteristics of this manuscript are said to furnish very poor evidence of the scholarship of their transcriber. It only remains to state that Bertram died January 8th, 1765, in his forty-second year; and Dr. Stukeley survived him less than two months.

A certain authority and weight has heretofore been given to "*Professor*" Bertram, which it now appears was wholly without foundation. At the date of his letter to Dr. Stukeley he was not even an undergraduate. He was only petitioning for admission as a student at the University of Copenhagen; and his professed transcripts of the Richard MS. were the product of an undergraduate's pen. As to his professorship, with its high sounding title: it does not appear to have amounted to much more than the tutorial work to which many a Scottish undergraduate resorts under similar circumstances, with a view to eke out his slender finances, and help him on to his degree.

Nevertheless there is a certain appearance of scholarship, and some facility in Latin composition, involved in the concocting of the Richard MS. which might be supposed to surpass the powers of an undergraduate. He quotes some fifteen or sixteen ancient authors, including Diodorus Siculus, Livy, Strabo, Cæsar, Pomponius Mela, Virgil, Pliny, Lucan, Tacitus, &c. Most of his references may indeed be found, as already stated, in Camden; and the remainder could readily

be culled from more familiar pages, including those of Stukeley himself. Yet it might be assumed, without inquiry, that some scholarship, and a degree of practise in Latin composition, were necessary, in order to put together such a piece of work for the eyes of European scholars. It is noteworthy, therefore, that Bertram in his petition for admission to the University, professed to study History, Antiquities, Philosophy and Mathematics; but of the Classical Languages nothing is said. Are we to infer from this that he was already so perfect in them as to regard their further study superfluous; or must we assume, in accordance with the ordinary practise of undergraduates, that he exercised his options in selecting the departments best suited to his tastes and acquirements?

In reality the latinity of Richard, which so charmed Dr. Stukeley and his contemporaries, is very much in the style of undergraduate, or school-boy Latin composition; and can only have passed muster with them on the assumption that it was fair monkish Latin, which must not be tried by too high a standard. Mr. Woodward has pointed out the anachronism of a monk of the fourteenth century, using the word *statio*, neither in its ancient sense, as the spot on which a guard was placed; nor in its medieval sense as a religious station, or halting-place for ecclesiastical processions: but in its wholly modern and antiquarian acceptance. Similar examples abound. But, in truth, most of the original paragraphs, by means of which the classical quotations are pieced together, read very much like a school-boy's exercise, first written in English, and then translated, word by word, with the help of his dictionary.

This suggests an inquiry, which has hitherto been overlooked, though by no means without its important bearing on the general question. What part was "the famous Mr. Gramm, Privy Councillor and Chief Librarian to his Danish Majesty," playing in the ingenious mystification, when he wrote the "prolix and elaborate Latin epistle," which Bertram enclosed to Dr. Stukeley in his own first reply? The correspondence with Bertram was apparently conducted, on both sides, in English. But to Herr Gramm, as we have seen, Dr. Stukeley replied in a Latin epistle as elaborate and stately as his own, in which he refers to the rare and seemingly unique Copenhagen fragments of a newly discovered work of Richard, monk of Westminster. It is no slight apology for Dr. Stukeley's unquestioning reception of Bertram's transcripts of an unheard-of fourteenth century MS., that its existence was thus guaranteed by one of the very highest authorities:

the Custodian of the Royal Library, and the fittest of all men in Copenhagen to certify to the genuineness of the professed discovery. At least one more Latin epistle from the same lettered dignitary followed; and then came the news of his death: before Dr. Stukeley had become sufficiently "solicitous about Richard of Westminster" to ask for extracts from his Roman treatise.

But when the English antiquary's curiosity was fairly roused, he did his best, according to the light of that uncritical age: strove to get hold of the original MS.; proposed to purchase it for the British Museum; and, on failing in this, obtained a transcript of the whole. That Dr. Stukeley should have been content with this and the excuses of Bertram for witholding the original,—lame as they now appear,—cannot greatly surprise any one who fully estimates all the circumstances. But that Bertram was able to put off the Royal Librarian in the same fashion, and induce him to write to a distinguished foreigner about a MS. only known to him by the vague report of an undergraduate, is inconceivable. If there ever was a manuscript, genuine or manufactured, Herr Gramm must have seen it. One of the rarest and most precious of ancient historical works, not only unknown, as Dr. Stukeley wrote to him, in any British Library, but seemingly unique, lay ready for easy acquisition by the Copenhagen Royal Library. It had been the subject of elaborate Latin correspondence with the learned secretary of a foreign society, and its worth had been set forth in the strongest terms. Yet, if such a MS. ever existed, instead of being secured for the Royal Library, it was allowed to pass into the possession of Bertram, and when enquired for by English scholars immediately after his death, was no where to be found.

Bertram was a humble friend and protegé of his Majesty's privy councillor and chief librarian. Under such circumstances Herr Gramm might command his services in any needful correspondence with Dr. Stukeley about genuine or apocryphal manuscripts; but Bertram could have no influence over the learned Librarian's pen. Can we, then, avoid the inference that he was in some degree *particeps criminis* in the earlier proceedings, by means of which Bertram successfully palmed on English scholars the mischievous imposture which has more or less affected the historical and antiquarian literature of Europe, for a whole century, in reference to the Anglo-Roman period of British History?

At the same time, it must not be overlooked that the first "little extract," and the "imitation of the hand-writing" of the wondrous

history of Roman Britain, were not transmitted to Dr. Stukeley till after the death of Mr. Gramm; nor indeed was it till after that event that Bertram professed to have "at length, with some difficulty, got the manuscript into his own hands."

It is perhaps a bold hypothesis to conceive of one in the position of the Royal Librarian bearing any share in a literary forgery. But the age was characterised by singularly loose ideas on such subjects; and the part he is shown to have taken in the correspondence is equally inexplicable, whether we suppose that a genuine MS. did exist, about which he gave himself no further trouble, or that a hoax was being perpetrated on English scholars in which he bore a part. Had the Latin of the commentary been as creditable to the scholarship of its reputed author as the enthusiasm of its first editors represented it to be, we might have been tempted to trace in it the hand of Dr. Stukeley's "prolix and elaborate" Latin correspondent. But in reality the portions of the Tractate not made up of quotations, are, as has been already said, very much in the style of Latin to be expected from the Anglo-Danish undergraduate. Assuming, therefore, his ability to produce the Latin commentary, his familiarity with the English language rendered him otherwise well fitted for the task. As to Mr. Gramm, he had been in England, visited the Universities, was remembered by Mr. Martin Folkes as a learned foreigner, and possibly carried away with him reminiscences of its antiquarian enthusiasts which bore fruit of a kind then cultivated on the tree of knowledge. The writings of Dr. Stukeley are seasoned with a sufficient stock of credulous fancy to provoke even a grave privy councillor into lending a helping hand at a trial of his gullibility. If, on the contrary, we suppose him to have been Bertram's dupe and tool, he must have proved even more gullible than the English antiquary.

As to the motives which induced the chief culprit to carry out his fraud with consistent pertinacity, they need not greatly perplex us. It was a work of time: begun probably with no deliberate purpose of carrying it to the culpable extent it ultimately reached. Bertram's first letter was probably the mere hoax of a clever, but thoughtless undergraduate. But for the opportune death of Hans Gramm,—whatever the nature of his share in the correspondence may have been,—it may be presumed that the later stages of full-developed imposture would never have been reached. But when Dr. Stukeley settled in London, "began to think of the manuscript," and became "solicitous

about Richard of Westminster," his Copenhagen correspondent had to choose between confessing, and persisting in the forgery;—and how many subsequent pages of antiquarian literature depended on his choice! Dr. Stukeley's importunities could not be evaded; and once committed to his dishonest course, Bertram carried it out consistently to the end. His success may have delighted or alarmed him, according to the aspect in which he regarded it; but, tried by the standard of that eighteenth century, his delight is more probable than his alarm. He had achieved for himself a name among European scholars, and established confidential relations with foreign literati; and he thenceforth cultivated them without dread of exposure. He appears to have attained to the highest academic honours, and to have maintained a friendly correspondence with his learned English dupe to the last. So late as Oct. 30, 1763, Stukeley records in his Diary: "I received from my friend, Dr. Bertram, 3 copies of the designs of the Danish Military, colored: one for the King."

In the age of Psalmanazar, Macpherson, and Chatterton; a century which gave birth to the "Hardyknute," the Ossian Epics, and the Rowley Poems; to "the Double Falsehood" of Theobald, the "Vortigern and Rowena" of Ireland, and so much else of a like kind: it cannot be denied that the fabricator of the "*Commentarioli geographici de Situ Britanniæ, et Stationum quas Romani ipsi in ea Insula ædificaverunt*," ascribed to Richard of Cirencester, had his abundant reward. Not only Dr. Stukeley and his credulous brother antiquaries, among whom the ingenious but fanciful Whitaker may be classed; but the incredulous Ritson, the laborious and accurate Roy, with some of the very foremost of historians, Gibbon, Suhm, Lappenberg, and Lingard: have bowed to his authority; and a whole century of European scholars has yielded unquestioning faith to his bold imposture.

ON THE STATE OF MEDICAL SCIENCE IN THE PROVINCE OF ONTARIO.

BY J. N. AGNEW, M.D.,

Secretary of the Medical Section of the Canadian Institute, and Member of the Medical Council of Ontario, for the Division of Midland and York.

In making a few observations on the present state, and future prospects, of Medical Science in Ontario, it may be as well to premise that, it is not my intention, nor, indeed, is it in my power, to give a summary of the contributions, to which the science is indebted to the learning and research of the Ontario Profession. I must confine myself to a very general view of the subject, and, yet, I trust to be able to show that, in this fair Province of ours, the science of Medicine is no laggard in the way, but that, it is pursued with the same devotion to the great end of alleviating human suffering, as in the most favored lands. It is true that in a new country, such as Canada, where the duties of the physician are more laborious, and the rewards greatly less, than in older and wealthier communities, it is impossible to find so large a class of medical men, who can devote the same leisure to the pursuit of original research, as those older communities furnish; still, we claim for the profession here that it embraces many men who would take high rank, as men of culture and ability, in any part of the world; while the great body of the profession would not suffer in comparison with any other country. I am not unconscious of the fact that exception may be taken to so strong a claim. It may be urged, not altogether without truth, that many of the young men of the country enter upon the study of medicine somewhat late in life, and with, perhaps, rather limited education, and that, as in the mother country, the standard of preliminary training, up to which students must come, is higher than here; therefore, they must be the more scientific body. I would not, for one moment, be supposed to ignore, or undervalue the great advantage of a thorough education, preliminary to entering upon the study of medicine. At the same time, I do not hesitate to say that, the development of a high literary taste, within university walls, is often not found to conduce so beneficially, as many suppose, to the study of a science, which, in many of its details, is rather shocking to the refined sensibilities of the student, who has given up some of his best years, to the enjoyment of

the fancies, and the beauties, of the immortal Greek and Latin bards. Such an one enters the dissecting room, for example, and *hic labor, hoc opus est*, for which his tastes are altogether unsuited. He has to bring himself to the practical study of anatomy, as a task, far less poetic, and far more disagreeable than his first attempt to conjugate a Greek verb, cross the *pons asinorum*, or solve a quadratic equation. Indeed, I think it will be found, by the practical test of comparative success, in the medical classes, that those young men often succeed best, who have worked their own way, from humble beginning, fired with the honorable ambition of acquiring a profession that will secure for them an independent livelihood, and a higher social position. Such students, generally well matured in mind and body, and free from many of the hindering frivolities of youth, bring to bear upon their studies an enthusiasm that carries all before it, and a devotion to all the minor details, both of reading and of clinical observation, so necessary to make them thoroughly furnished for entering upon the practice of their profession. Hence, it often happens that, men whose general attainments would pass a poor enough muster, outside their own calling, are perfectly at home there and may even possess a profound knowledge of the best medical literature. Let me not be misunderstood. To take high rank in the scientific world, and to command for ourselves, as a body, the ungrudging respect of our fellow-countrymen, of all classes, we must aim at a high educational standard. I do not depreciate a preliminary college training: on the contrary, if it were possible, I should be glad to see all our young men take their B.A. degree before entering the medical classes. At the same time, I do not hesitate to say that, the absence of early educational advantages, of this kind, is proved by experience, in Canada, to be not incompatible with a high degree of success, both in the study and practice of the healing art. Some of our young men, who never spent an hour within college walls, have borne off the honors of the colleges of physicians and surgeons, of the mother-land, and many of our most successful and accomplished practitioners, never learned the Greek alphabet, or essayed to scan a line of Virgil.

We have at present three medical schools in Ontario: the Royal College of Physicians and Surgeons, Kingston; the Medical Department of Victoria College, Toronto; and the Toronto School of Medicine, in affiliation with the University of Toronto. Upwards of two hundred students attend the sessions of these three schools, during their winter courses, and, probably, an average of fifty young men are annually

granted diplomas, entitling them to become licensed, and "duly" qualified to enter upon their professional calling.

The number of medical men now in practice in Ontario is estimated to be about two thousand. Estimating the population to be, in round numbers, two millions, this would only give one physician to every two thousand inhabitants,—not too many, one would say, in a sparsely settled country, such as Canada. The tendency, however, is far too prevalent, for medical men to swarm at the great centres of population, to their own manifest disadvantage, while, many of the outlying districts are left destitute of the comforts of the physician's aid. The reason for this is obvious. On the one hand, the people in very new parts of the country are poor, and unable to give any adequate remuneration for the physician's services; and, on the other, there are very few young men,—generally a rather sanguine class,—who are willing to sacrifice the hope of winning one of the great prizes of the profession, for the "hope deferred, that maketh the heart sick." Where, however, young men, on leaving college, have the pluck to face the hardships of a new settlement, for a few years, and enter, fearlessly, upon the practice of their profession, the people become proud of the "Doctor," often reward him with municipal honors, look up to him as an oracle of wisdom, and, in the end, give him substantial evidence of the constancy of their esteem. No new man can supplant the "old Doctor," who, generally, becomes an affluent and most influential man. Of course, there is an opposite side to this picture; but so there is to all pictures, and, generally, where the opposite occurs, the fault lies with the medical man himself.

Since the Imperial Act of Confederation passed, establishing the DOMINION OF CANADA, medical delegates from all the Provinces met in the "ancient capital," at the call of the Quebec Medical Society, and, subsequently, (last year) in the city of Montreal, and formed a Medical Society for the Dominion, called "THE CANADIAN MEDICAL ASSOCIATION." It is hardly possible to estimate the amount of good that may be expected to arise from this step. On this subject, in a paper read before the medical section of the Canadian Institute, on the 12th December, 1868, I remarked, "The formation of the Canadian Medical Association, and the success, in point of numbers, and debating ability, of those attending its first meetings, is, to my mind, a subject for the liveliest congratulation. The work, however, so far, has been of an initiatory, or preliminary character almost exclusively, and,

although, many questions of great interest to the profession, and the public at large, came before the notice of the Association, yet, I think, it will be conceded that, it remains for the next annual meeting, to give the Association its character and rank, amongst the scientific societies of the world. It is, therefore, to be hoped that, at the Toronto meeting, next autumn, this city may have the honor accorded to her, of inaugurating the real work of the Association. But, if the meeting is to be made a successful one, it can only be by early, earnest and persevering labour; and much of the responsibility and labour, must devolve upon the medical profession of Toronto. In this connexion, I cannot help congratulating the medical section of the Canadian Institute, on having secured, for our Chairman, the able and learned Vice-President of the Association; and, I trust that, nothing in the way of hearty co-operation with Dr. Hodder, shall be wanting, to give *eclat* to the coming meeting, and crown it with the highest success. The experienced, senior members of the profession will, I trust, pardon me for hinting that, they will be expected to take the lead, in contributing from their stores of learning, some well-matured scientific papers; and, if these cannot be hurriedly prepared, the sooner they are commenced the better. I trust, too, that in this respect, the medical section will give a good account of itself."

"To give, however, to the Canadian Medical Association a lasting vitality, it must have a permanent source of supply, and this, it seems to me, can only be secured by the formation of branch associations, embracing areas of convenient dimensions. County societies, in affiliation with the Canadian Association, should be organized, wherever such do not already exist. The formation of such tributaries would not only give vitality and strength to the Dominion Society, but would, also, give unity and compactness to the profession of Ontario; and, rising above the rivalries of the past, enable us to exercise that influence in the creation of public opinion, on all the great questions of social interest, to which, by our numbers and habits of thought, we are justly entitled."

"The quiet and unobtrusive calling of the medical profession, and the unending round of duty its practice involves, forbid our entering the lists with many of the robustious demagogues, whose noisy declamations tend to make one think they have been sent on a special mission to turn the world upside down. It is, nevertheless, gratifying to observe that, in Britain the medical profession is not only accorded a higher social position than ever before, but that, the pursuit of scientific

inquiry, and the general attainments of physicians, make them considered to be, in a high degree, available to fill positions of the greatest honor, and the highest public trust. And here, in our own fair Ontario, the sprinkling of able medical men, in our Legislative Assembly, is conclusive proof that, the people of this country are not backward to recognize true merit, though it may not obtrude itself, by noisy demonstrations on their notice at every turn."

"It is no vain boast, to claim that the healing art has, in all ages, embraced within its circle, men of culture and of thought, and that, science, in the broadest sense, has been much enriched by the research and learning of the medical profession. The close of the last century, and the beginning of the present, produced discoverers, in the domain of medical science, who may fairly take rank with Newton or Columbus; and the professsion now claims, among its votaries, men of whom the world may well be proud. It is true that, the seeming diversity in the medical theories of the day, has given rise, in the public mind, to the idea of a diversity of schools; and we have, in medicine, numerous off-shoots and excrescences from the parent stock, just as we have, in religion, diversity of creeds. Probably, however, in regard to both cases, these diversities arise from superficial examination of the subjects, and inaptitude, or inability, to grasp and apprehend the truth. For, doubtless, in each, there is but one legitimate school, and that one must be founded on truth, which is immutable."

"But, returning to the subject in hand, it is impossible, I think, to over-estimate the value to the profession, of the CANADIAN MEDICAL ASSOCIATION. The leading medical men of the Dominion will be brought together, annually, for the reading of papers, and the discussion of questions of interest to the profession. Such meetings, while they may be expected to disseminate a vast amount of useful information, and give the profession the valuable experience, gathered year by year, by practical observation, in regard to the character and treatment of prevailing diseases, will, at the same time, serve as a most wholesome and needed incentive to studious, systematic reading. It has been, probably, too much the habit of the profession, in this country, to consider the goal as having been reached when a 'license to practice' was secured. Human nature is the same in medical men as in other mortals, and, it seems to be the tendency of human nature to fold hands, and indulge in relaxation, whenever the spur of emulation or self-interest is laid aside. The field is as open to original observers, in the wide Dominion of Canada, as in any other part of the world;

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the secular press, the following passage is *apropos*: "The Allopaths (of course, I use this designation as a convenience, not to express or define a "confession of faith,") have all along professed to despise the other 'sects' as ignorant and dishonest; they are now compelled, by the levelling-up process, to admit them to terms of perfect equality. They appear on the same register; they are members of the same College; they are legally entitled to be met by Allopaths in consultation. Should Allopaths refuse, the public would sympathize with the *theories* of the new school against the *prejudices* of the old. They are entitled to admission to the same societies and associations as the Allopaths. Should they be excluded, public sympathy would be promptly at their side, as the weak and persecuted. Should they be admitted, they will, doubtless, endeavour to hold up and hold forth the beauties of '*Similia Similibus Curantur*,' and, refusal to discuss their dogmas, by the Allopaths, would be construed as an indication of fear for the result; while, to accept the challenge, on every occasion, would make medical societies bear-gardens, alike demoralizing to the profession and unedifying to the public. If the Allopathic body, numbering, as they do, the vast majority of the medical men of the Province, and possessing the only educational institutions, would work harmoniously with one another, and strive honestly for the elevation of their own status, trusting to the march of intelligence and learning, for the extinction of ignorance and quackery, rather than to Parliamentary enactment and intrigue, public sympathy and approval would far more certainly be accorded to them, and the end they profess to have in view would far more certainly be realized."

The legal status accorded to the "systems" of Homœopathy and Eclecticism, by the Legislature, is without precedent, in any other part of the world. *Liberality, however, frequently degenerates into license.* In this case, license to practise physic. The powers entrusted to these bodies to form examining boards, for the purpose of licensing students to practice medicine, was found by the Legislature to be used in a manner dangerous to the public interests;—the country was being flooded, rapidly, with incompetent men,—something had to be done to check, and, if possible, put a stop to this wholesale system of licensing, and, instead of securing this end, by independent means, or wiping out the Homœopathic and Eclectic charters, the Legislature committed the grave mistake, of "consolidating" the Acts relating to Medicine and Surgery, and of thus coercing men, avowedly holding the most antago-

nistic principles, to sit together in the same Council, and register their names, without distinction, as members of the same College. Now, to my mind, it is as wrong in principle, if not in degree, to coerce the different "schools" in medicine, into a distasteful union, as it would be for the Legislature to attempt to compel religious bodies, differing from one another, to meet together, in a common Synod, for united ecclesiastical legislation for the spread or propagation of diverse religious systems. The influence such legislation may be expected to exert, on the future of the medical profession, in Ontario, if not repealed, is easily foreseen. The twenty-fifth section of the Act provides that, students who elect to be registered as Homœopathic or Eclectic practitioners, "shall not be required to pass an examination, in either Materia Medica, or Therapeutics, or in the Theory or Practice of Physic, or in Surgery or Midwifery, except the operative practical parts thereof, before any examiners other than those approved of by the representatives in the Council of the body to which he, (or they) shall signify his, (or their) wish to belong." Thus, the old Homœopathic and Eclectic boards are not only perpetuated, but they are placed in a position to hold out a bribe to incompetency. And the bait of a short curriculum and an easy examination,—partly beyond the control of the central board—may be safely calculated to catch numbers of student recruits, particularly as their registration makes them members of the same College of Physicians and Surgeons, as those passing the higher examination. I know it is said by these bodies that they are persecuted by the "old school," because they have, or claim to have, the support of influential members of the community, and, indeed it may be true that they have such support, for, however, strange it may appear, it sometimes happens that a clergyman, for example, who has great doubt about the exact nature and bounds of his own religious creed, has none whatever about his medical one, and a lawyer, who, if asked for a legal opinion would take a week's examination of musty authorities, before venturing to give it, will sometimes undertake to decide the relative merits of differing "schools," in the difficult science of medicine, without a moment's hesitation. The opinions of such men may indicate a perverse preference for whatever is either eccentric or heterodox, but, however strongly they may appeal to the *prejudices*, they make no impression on the *judgment* of mankind. And, besides, such support is, generally, of the most fickle and unstable description. The first fiery ordeal to which the "beautiful theory" is subjected, dissipates the clergyman's faith,

"like the morning cloud, or the early dew," and makes the man of briefs, awake to the fact, that, whatever weight may be safely attached to his legal opinion, he is an unsafe guide when he travels beyond the record, and deals with questions of life and death, about which he knows little or nothing. Such presumption may be met; and it may be traced, too, to the parent of all presumption—ignorance and self-conceit. But I entirely repudiate the charge of jealousy, and, I go further, and assert that the latitude allowed, for the free expression of opinion, by the medical profession, and the opening of the columns of medical journals, for the advocacy of the most opposite theories, often, prove that sectarianism in medicine is not a necessity, and that, the motive prompting it, is not an honest search after truth. Medicine is a progressive science. Indeed, it cannot be made a fixed science; for, although the properties and action of medicinal agents, may be definitely ascertained, the type of disease is ever varying, and ever variegated, so that it is impossible to establish precise rules of treatment, or to claim, truthfully, to have "specifics" for every ill that flesh is heir to, as do the Homœopaths. But, surely the accumulated experience, gathered by the medical profession, in the centuries of the past, is not to be lightly cast aside, for the crude theories of an obscure, illiterate Dutchman, or the rhodomontade and lobelia of a Yankee "steam doctor." Let the present anomalous union of "schools" be perpetuated by the Legislature, and the medical profession of Ontario will cease to be recognized abroad, and speedily deteriorate into degeneracy at home. Let the objectionable parts of the Act be repealed,—emancipate us from the double load of degradation, under which we are now placed, by Legislative enactment, and we shall soon occupy a position of high rank in the scientific world, and of increased usefulness, as a profession, in our own fair New Dominion. I seek not to deprive the Homœopaths and Eclectics of any "rights" they have had accorded to them, by the Legislature, in the past. I would restore to them, if need be, their individuality. I would protect the public, by requiring the students, who may present themselves for examination, before their boards, to produce evidence of having attended prescribed courses of lectures, at some of our own recognized medical schools. And, freed from the trammels of a coerced and unnatural alliance, I would seek to lay broad and deep the foundation of sound, scientific, medical education, and leave fancy theories to the inexorable logic of time, and solid results to the treasury of posterity.

POSTSCRIPT.—Since writing the foregoing, the Medical Council has held its first meeting. The principal discussion occurred on the following resolution:—

Moved by Dr. Agnew, and seconded by Dr. Oldright, Representative of University College, that

Whereas—A Committee of the late Medical Council of Upper Canada applied to the Legislature of Ontario, at its last Session, for the repeal of the Act, under whose provisions the Council was constituted; and

Whereas—The said Committee of the Medical Council drafted and obtained the introduction and passage of a Bill, entitled "An Act to Amend and Consolidate the Acts relating to Medicine and Surgery, in Ontario," without submitting such measure for the approval of their constituents, or in any way consulting them in regard to it, or even furnishing them with copies of the Bill, so that the vast majority knew nothing of its character until it had passed and become law; and

Whereas—The "consolidation" of the Acts relating to the Profession of Medicine and Surgery does not appear to have been contemplated when the Bill was introduced and read a first time, and was a change of title incident to the interjection of clause or sub-section two, of section eight, and other clauses consequent therefrom, at a late stage in the passage of the Bill, and when it was supposed by nearly all those who were responsible for it, to have received its final character; and

Whereas—The Coalition, in a Council, forced upon the Medical Profession, with two other bodies, known as Homœopathists and Eclectics, for the purpose of legislating in regard to questions involving the most vital principles of Medical Science, is viewed by nearly all the leading and thoughtful members of the Profession as fraught with great danger, and likely to lead to the most pernicious consequences—alike subversive of the cause of Science and of professional morality—for if the views held by all the great schools of the world are honestly embraced by the Medical Profession of this Province, and, if the so-called theories of the other bodies are honestly held by them, they cannot be compromised by either for any mere expediency without dishonor; and

Whereas—The incorporation of the Medical Profession with the Homœopathic and Eclectic bodies in "The College of Physicians and Surgeons for Ontario," without distinction of any kind whatever, is viewed by the Profession as highly objectionable, and calculated to compromise their status as recognized members of the great body of Scientific Practitioners of Medicine throughout the world; and

Whereas—The establishment of a Central Board of Medical Examiners for the Province, has, in the abstract, received the approbation of many leading members of the Profession, the exempting clause in favor of the systems of Homœopathy and Eclecticism is condemned as calculated to render nugatory the operations of the Board in favor of an advanced curriculum, and to greatly lower the standard of Education, inasmuch as Section twenty-five of the Act provides, "That every candidate who shall, at the time of his examination, signify his wish to be registered as a Homœopathic or Eclectic Practitioner, shall not be required to pass an examination in either Materia Medica or Therapeutics, or in the Theory or Practice of Physic, or in Surgery and Midwifery, except the operative practical parts thereof, before any Examiners, other than those approved of by the representatives in the Council of the body to which he shall signify his wish to belong," thus maintaining in full force, (with exclusive privileges not possessed by the Medical Profession) and giving greatly extended influence to

the Homœopathic and Eclectic boards, claimed by the promoters of the Bill to have been extinguished; and

Whereas—In addition to all the foregoing objectionable features of the Bill, its operation will, in all probability, cut off the recognition of our Medical diplomas by the mother country, and thus deprive our young men of priviliges they have not been slow to avail themselves of in the past—to their own credit and ours, and which they would no doubt earnestly desire to have still continued open to them; be it therefore

Resolved—That a Committee consisting of ——— be appointed to draft memorials to His Excellency the Lieutenant-Governor in Council, and the Legislative Assembly, in accordance with this resolution, and respectfully requesting the repeal of so much of the Medical Act as unites the Homœopathic and Eclectic bodies with the Medical Profession of this Province.

The discussion on this resolution occupied the whole of two sederunts, when the following amendments were proposed:—

Dr. Browse, seconded by Dr. Hamilton, moved that all after the word "Whereas," in the first clause, be struck out, and the following inserted:

"That inasmuch as three licensing bodies existed in Medicine in the Province of Ontario, whose privilege was to send forth practitioners of an inferior Medical education, and whereas it is highly desirable to protect the public by allowing only thoroughly educated men to receive a license to practice Medicine, notwithstanding the objections many of this Council may have, and do now entertain towards some of the clauses of the new Bill, we are prepared to use our best efforts to make it acceptable to the Profession and beneficial to the community at large, by raising the standard of Medical education throughout the country."

In amendment to the amendment, Dr. Grant, M.P., moved, seconded by Dr. Bethune—

"That, inasmuch as the Medical Bill, as at present constituted, is not in consonance with the wishes of the Medical Profession generally, as it has legislated into union members of various Medical bodies in such a manner as will not conduce either to their interests or prosperity, and that under these circumstances every endeavor be made to obtain a repeal of so much of the Medical Bill as unites these various bodies, and thus restore each again to its original status, with such safeguards of the public interest as may seem necessary."

This motion was lost. Dr. Browse's amendment was then voted on and carried. Dr. Agnew called for the yeas and nays, when the following vote was recorded for the original resolution:—

Yeas—Drs. Agnew, Day, Mostyn, Oldright, Bethune, Grant, and C. B. Hall—7.

Nays—Drs. Hyde, Edwards, Covernton, Hamilton, McGill, Dewar, Browse, Aikins, Lavelle, and Pyne—(10 regular Practitioners)—and Drs. Campbell, Field, Allen, Springer, Adams, Hopkins, Cornell, Carson, Hall, and Clarke—(10 Homœopathists and Eclectics)—in all 20.

NOTES ON THE SILVER LOCATIONS OF THUNDER BAY.

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Much interest having been excited, within the last few years, by the discovery of rich silver deposits in the district around Thunder Bay, Lake Superior, a brief account of the so-called silver locations of that region may not be unacceptable to our readers.

1. *General Geology of the District :*—The strata of the north shore of Lake Superior belong to three distinct periods of formation. The lowest of these strata in geological position, and consequently the oldest, consist of highly crystalline gneissoid beds of Laurentian age. These (marked *A*, in Figure 2) form the high land which lies, as a general rule, a few miles inland from the lake-margin; although in many places the Laurentian strata come down bodily to the edge of the lake, or throw off spurs which approach the shore-line more or less closely. The second series of Lake Superior strata (marked *B* in the diagram-section, Figure 2) consist of green and gray slates and conglomerates, with interstratified beds of quartz-rock, &c., belonging to the Huronian group. These Huronian strata, however, occur only here and there, as, more especially, at Michipicoten Harbour, Otter Head, Pic River, and along the back of Thunder Bay. Commonly, therefore, the strata of the third series (marked *C* in the diagram, Figure 2) immediately overlie the gneiss or other crystalline rocks of the Laurentian series. These higher strata form Sir William Logan's division of the "Upper Copper-bearing Rocks of Lake Superior." They belong, in themselves, to two probably distinct epochs, although conventionally referred to the horizon of the Calciferous Series of the east. They are thus regarded as altered strata of Lower Silurian age. They occupy most of the lower lands intervening between the elevated gneissoid region and the shore of the lake. Sir William Logan has subdivided these strata into two series: a lower, lying mostly west of Thunder Cape; and an upper series, ranging to the east of that landmark. Both are traversed by numerous dykes and masses of eruptive trap or greenstone; but, whilst the trappean rocks associated with the lower series are more or less compact in texture, and exhibit a marked tendency to assume a columnar or sub-columnar structure, those of the upper series are almost invariably amygdaloidal, and they rarely present a columnar aspect. The columnar condition of the lower series arises essentially rom the presence of joints or partings at right angles to each other,

the step-like outline (see Figure 3) so common in trap rocks, originating from fractures along these natural cleavage or separation planes. This is the true explanation, it may be observed, of the step-like aspect presented by trap rocks generally. The Lower Group (C^1) of the copper-bearing strata of Lake Superior consists largely of beds of black or dark-grey slate, and slaty quartzite, mixed here and there with layers of anthracitic chert, and associated with subordinate beds of dolomite, &c.; whilst the Upper Group (C^2) is made up principally of white and red sandstone, light-coloured conglomerates and limestones, and compact arenaceous marls, mostly of a pale yellowish-grey or pink colour. The silver and copper-bearing veins of the north shore of Lake Superior occur essentially in these altered Silurian strata: some outcropping in the lower, and others in the upper group.

2. *The Shuniah Location:*—This location lies about two miles due north of Thunder Bay, immediately west of Current River. It includes three double lots, viz., 8 and 11, 9 and 12, and 10 and 13, comprising altogether 1,680 acres. Its central portion is situated, by barometric measurement, at an elevation of 318 feet above the mean level of the Bay. To the north of this central portion of the location, the ground falls abruptly, and drains in great part into a small lake, known as Spruce Lake, which occupies a portion of lot 9, and from which a small creek flows through lots 10 and 13, and finally enters Thunder Bay. A sufficient water supply, for washing and dressing ores, could be obtained from this lake and creek, as well as from Current River, if the location were subdivided, and worked by different companies. These lots contain, moreover, an abundant supply of good timber, suitable for mining purposes, and for fuel.

The country-rock of the location consists of dark siliceous slates belonging to the lower portion of the Upper Copper-Bearing Series, described above (C 1). A broad and well-defined vein runs in a nearly east and west direction through the southern portions of lots 8, 9 and 10, with a slight northern trend in the eastern part of its course. Where it has been exposed, this vein averages from 20 to 23 feet in width, and has a very slight underlie towards the north. In sinking upon it, therefore, the shaft might be carried down to a very great depth entirely within the substance of the vein itself. Crystalline and amethystine quartz, holding native silver in many places, caps the upper part of the vein to the depth of a few feet, whilst, under this, the gangue or vein-stone consists essentially of calc spar. The vein presents the usual brecciated structure exhibited by most of the Lake Superior veins,

angular portions of the country-rock, in places much altered by chemical action, being thickly interspersed amongst the gangue. In some places, these imbedded portions of rock are of comparatively large size, forming the so-called "horses" of the miners. Here and there, the minute cracks, by which they are traversed, are coated with native silver and foliated silver glance. In the veinstone proper, especially near the south or foot wall, both native silver and silver glance occur throughout the entire depth to which the main shaft has been at present sunk (67 feet); and some rich pieces of ore have been taken from near the centre of the vein at various depths. The vein carries also black and yellow zinc blende, specks of galena and copper pyrites, iron pyrites, arsenical pyrites, crystals of colorless, smoky, and amethystine quartz, and cubes of pale green fluor spar. The yellow blende holds in most samples a small amount of silver; and, in one assay, a trace of gold, corresponding to about 2 dwts. in the ton, was obtained from it.

Several cross lodes intersect or run into the main lode. These are at present altogether undeveloped, but they shew on the surface a gangue of quartz carrying small quantities of galena, blende, and pyrites. One enters the main lode on lot 9, and runs S. 78° to 80° E. Another, on lot 8, runs towards the N.E., and re-appears apparently on the east bank of Current River. These cross veins exhibit an average breadth of from five to seven feet, and, as they are well defined, a certain outlay might be legitimately expended on their development. As the expense of sinking upon them, however, would be considerable, it would be advisable to wait until the drifts upon the main lode reveal their comparative richness at the points of intersection. A shaft was commenced in the Autumn of 1867 on the main lode, on the dividing line of lots 8 and 9, but as this shaft was not well proportioned, it was stopped at a depth of about six fathoms, and another was commenced at a distance of 175 feet to the west, on lot 9. This has been carried down to a depth of 67 feet, but the work is now suspended. From the conformation of the surrounding district, there would appear to be little apprehension of trouble from water in continuing the shaft, but in case of any difficulty of this kind, an adit might easily be driven on the north side of the lode so as to drain all the workings above the level of 120 or 130 feet, measured from the surface outcrop of the vein.

Many exceedingly rich peices of veinstone have been taken from both the main and eastern shaft, but it is not, of course, pretended that the vein, as at present developed, will yield pay-ore throghout its width,

or meet for some time the cost of its development. The deepest shaft is comparatively little more than a surface exploration: sufficient, it is true, to shew the strength and permanency of the vein, and to afford trustworthy indications of richness at lower levels, but far too slight to be taken as a test of the actual richness of the lode. Few veins of this character, probably not two per cent. of those belonging to the paying mines of Europe and America, have yielded pay-stuff at a less depth than 40 or 50 fathoms; and in the present case, although a degree of risk is necessarily involved in all mining expenditure, the indications fully warrant the conclusion that ample returns will be eventually obtained, if the workings be sufficiently extended. In place of drifting at the level now reached, it would be advisable, as recommended, in separate reports, by the writer (August, 1868), and by Capt. Plummer, late Superintendent of the Bruce and Wellington mines (October, 1868), to restrict expenditure at present to the main shaft, so as to carry this down uninterrupedly with cross-cuts at intervals, to at least 30 or 40 fathoms, when pay-ground it is thought, may be confidently looked for, if indeed it be not reached at a higher level. Samples taken from different parts of this shaft have yielded large assay-returns, shewing the constant presence of silver at various depths. A sample, consisting of quartz with dull specks of silver glance and some galena, obtained by the writer at a depth of about 55 feet from the surface, gave a cupellation-button of pure silver equal to 6.67 per cent. This is equivalent to 162 lbs. Troy in the ton of 2000 lbs.; or, in value, to $2605 per ton. Another sample, weighing over 3 lbs., gave 2.18 per cent. silver, corresponding to 53 lbs. Troy, or to $853 per ton of ore. Samples of this richness, it will, of course, be understood, are at present of comparatively exceptional occurrence; but as they occur at various depths in the shaft, they may be referred to as affording undeniable proof of the promising character of the vein.

3. *Westward extension of the Shuniah vein*:—The ground is altogether unbroken to the west of the Shuniah location, but the vein has been traced, by outcrops at various points, in this direction, across three lots held by a Hamilton and Toronto Company; and, from thence, still westward, over a distance of several miles, across property belonging chiefly to the Rockland and Ontonagon Mining Companies. Trial shafts are to be sunk on this western extension of the vein during the present season.

4. *The Trowbridge Location*:—This lies immediately east of the

Shuniah property. It comprises a single lot of 400 acres, traversed throughout its entire length by Current River. The bed of this stream has been hollowed out apparently in the axis of an anticlinal of more recent date than the formation-period of the mineral veins of the district. At this spot, consequently, the veins have been somewhat broken up and deflected, but several can be distinctly traced within the location. No exploratory work, however, has been undertaken, as yet, with a view to their development, although they are undoubtedly of good promise. The surface gangue of the principal vein consists largely of amethystine quartz.

5. *Location of the Thunder Bay Silver Mining Company*:—To this property, which lies for the greater part east of the Trowbridge Location, a special interest is attached, as it was here that the first discovery of silver on Thunder Bay was made, in the Autumn of 1866, by Mr. Peter McKellar. The property of the Company comprises 1700 acres, having a frontage of about two miles on the shore of the bay, including the mouth and lower falls of Current River, where a mill for treating the ore is now being erected. At a distance of about a mile from the shore-line, an abrupt ridge or escarpment extends in a general east and west direction across the location, with its steep face fronting the south. Here, on lot 1 of Herrick's plan, an exposure of a broad quartz-vein containing native silver in extraordinary abundance, mixed in places with silver glance and specks of galena, was first discovered. This spot was near the junction of two veins, one running apparently about N 15° to 20° E., and the other in a direction a little north of east. The latter vein is thought by some observers to be a continuation of the Shuniah vein, but it is probably distinct. Its gangue consists essentially, if not wholly, of crystalline quartz, whereas in the Shuniah vein, the quartz gives out at a few feet from the surface, and the gangue passes entirely, or nearly so, into calc spar. If the two veins really belong to the same fissure, they probably occupy different levels, in consequence of a break or dislocation at or near Current River. Both, however, are in the same country-rock : the black silicious slates of the lower portion of the copper-bearing series. Three shafts are now being sunk, drifting done, and other extensive works are being carried out at this location, under the able management of Mr. Macdonald, who has had much experience in the silver mines of Norway, and elsewhere. On passing through the rich surface-shew, the sinking as might have been expected, was carried down for a time in poor ground, but the vein is again putting on a very promising

appearance, and there can be no doubt that large returns will eventually reward the enterprise of the owners. It must be remembered however, that in opening a mine of this character, it is impossible to force results. Both time and money are required for the proper development of a mine, before actual returns can be legitimately looked for; and the workings on the Thunder Bay Location were commenced little more than a year ago.*

6. *Eastern Locations:*—These comprise some fifteen or sixteen lots lying to the north-east, east, and south-east of the Thunder Bay mine. The greater number belong to the Rockland Silver Mining Company, of which Mr. Dewe, of this city, is agent. Others are held by private individuals. The ground throughout is at present altogether undeveloped, but outcrops of strong veins occur in various places, although no actual discoveries of silver have as yet been announced. Two parallel veins, running in a general east and west direction, are said to have been traced upon the Rockland property.

7. *Wood's Location:*—This location, the property of the Montreal Mining Company, lies just beyond the limits of Thunder Bay, but being closely adjacent to Thunder Cape, it may be conveniently referred to in the present communication. The presence of silver at this spot was discovered last summer by an exploring party under the charge of Mr. Thomas Macfarlane, formerly an officer of the Geological Survey, but at present in the employment of the Montreal Mining Company. An elaborate paper on the geological structure and lithology of this locality, by Mr. Macfarlane, will be found in a recent number of the *Canadian Naturalist*. The strata, here, belong to the higher division of the Upper Copper-bearing series (§ 1). The vein, in which the silver occurs, has only been recognized, at present, on a small rock or islet, lying about a mile from the shore. According to Mr. Macfarlane, this, with some adjacent islets, appears to be the remains of a large dyke intersecting the strata which originally occupied the space between these now outlying rocks and the mainland. The vein strikes N. 32° to 35° W., with an eastward dip of about 80°. Its width on the north side of the islet is stated to be about twenty feet, and it subdivides towards the south into two branches, each of seven or eight feet

* Since the above was in type, the following announcement has appeared in the Toronto papers: "Collingwood, July 6.—The steamer *Chicora*, from Lake Superior, arrived this morning with sixteen packages of silver ore, valued at $20,000, consigned by the Thunder Bay Mining Company."

in width. The gangue is essentially calc spar and quartz, carrying galena, blende, iron pyrites, and copper pyrites, with native silver and silver glance in the west branch. A considerable amount of ore, 1,336 lbs., was sent to Montreal, and there carefully sampled, into four lots, under the direction of Dr. Dawson, Principal of McGill College. No. 1 consisted of solid pieces of rich veinstone; whilst Nos. 2, 3, and 4, were sampled from borings, and were thus in the form of powder. Assays made by Dr. Hayes, of Boston, and by Mr. Macfarlane, gave the following results:—

Dr. Hayes:	No. 1.	No. 2.	No. 3.	No. 4.
Per centages	41·17	11·26	5·82	1·18
Oz. per Ton of 2,240 lbs	15,064	3,678	1,901	385
Mr. Macfarlane:	**No. 1.**	**No. 2.**	**No. 3.**	**No. 4.**
Per centages	13·14	7·3	4·94	1·82
Oz. per Ton of 2,240 lbs	4,294	2,384	1,613	594

Before these results were made public, another set of the samples was forwarded by the President of the Montreal Company, for assay, to the writer. The results were given, in tabular form, as follows:

No. 1. Mean of two assays:

Silver 14·96 per cent.. { =4,886 oz. 18 dwts. 15 grs. in Ton of 2,240 lbs. / =4,363 " 6 " 15 " " " 2,000 lbs.

Average value of silver { In Ton of 2,240 lbs. of ore=$6,547 100/64 / In Ton of 2,000 lbs. of ore=$5,846 100/86

No. 2. Mean of two assays:

Silver 7·88 per cent... { =2,574 oz. 2 dwts. 14 grs. in Ton of 2,240 lbs. / =2,298 " 6 " 9 " " " 2,000 lbs.

Average value of silver { In Ton of 2,240 lbs. of ore=$3,449 100/33 / In Ton of 2,000 lbs. of ore=$3,079 100/75

No. 3. Mean of two assays:

Silver 5·27 per cent... { =1,721 oz. 10 dwts. 14 grs. in Ton of 2,240 lbs. / =1,537 " 1 " 14 " " " 2,000 lbs.

Average value of silver { In Ton of 2,240 lbs. of ore=$2,306 100/85 / In Ton of 2,000 lbs. of ore=$2,059 100/85

No. 4. Mean of three assays:

Silver 1·71 per cent... { =558 oz. 12 dwts. in Ton of 2,240 lbs. / =498 " 15 " " " 2,000 lbs.

Average value of silver { In Ton of 2,240 lbs. of ore=$748 100/52 / In Ton of 2,000 lbs. of ore=$668 100/52

The per centage values found in the three sets of assays, were, thus, as follows:

	No. 1.	No. 2.	No. 3.	No. 4.
Dr. Hayes	41·17	11·26	5·82	1·18
Mr. Macfarlane	13·14	7·30	4·94	1·82
E. J. Chapman	14·96	7·88	5·27	1·71

With the exception of No. 1, these results agree as closely as could be expected, since, in mixtures of this richness, it is impossible to get two assay-portions exactly alike. A single additional speck of native silver or rich galena, would be sufficient to occasion a marked difference in the per centage returns. Samples No. 1, consisted of solid pieces of rock and ore, and therefore no two could be expected to present a similar composition; but the amount said to have been found in the assay by Dr. Hayes, would indicate that nearly one-half of the fragment, selected for assay, consisted of metallic silver. Can it have happened that, in taking down the figures, an error of transposition has occurred, and that in place of 41 we should read 14? If this be so, the assay-results agree very closely.

The money values stated in the returns by the writer, assume the value of fine silver to be equal to $1 34 per oz. Troy. In the Report of the Directors (February 17, 1869), these values were altered into others, in which the value of the silver was calculated at $1.24 per oz. According to the Report, this was the value quoted, at that date, in England, for bar silver, namely, 5s. 0¼d. sterling per ounce. In altering the writer's figures, however, the Directors were led into error, as the "bar silver" referred to, is simply "standard silver," *i.e.*, silver containing the allowed proportion of copper alloy; whereas the silver obtained on the assay cupel is perfectly pure or fine silver, identical with, or even purer than, the so-called "cake silver" of commerce, as obtained by cupellation on the large scale. The latest English quotations give for "bar silver" and "cake silver," respectively, the values of 5s. 0½d., and 5s. 5½d., per oz. Troy. The value per oz. adopted by the writer, therefore, was rather below than above the mark.

8. *Concluding Observations*:—The preceding notes on the silver-bearing veins of the Thunder Bay district, are necessarily more or less incomplete, as data are at present wanting for an extended or detailed report. Enough, however, is known to prove incontestibly the great mineral wealth of the region. The district would offer, at least, a most remarkable contrast to other mining centres, if the veins, which run within it, were to turn out altogether deceptive. From the great strength of these veins, and the rich surface-shew which many of them present, it may be safely concluded, that they cannot fail to pay, and pay largely, if sufficient capital be expended in their development. Disappointment is very commonly caused, especially in new countries,

by an attempt to work mining property with insufficient means, and on too small a scale. The ore may yield a fair profit, but the production is not sufficient to render the aggregate profit of much account. Hence, if a lode begin to run poor, or the walls come together for a time, or heavier machinery be required, or other difficulties arise to cause a temporary stoppage, the works are too frequently abandoned altogether. In estimating the value of the Thunder Bay district, as a mineral region, it must not be forgotten that, as regards climate, facility of access, cheapness of labour, etc., the district possesses marked advantages over the other argentiferous regions of this continent. It should be remembered also, that the amount of silver required to make a paying ore is very slight. In the dressing of ordinary metallic ores, as those of lead or copper for example, an amount of metal equal to one or two per cent., is almost invariably left in the waste slimes or tailings: whereas 1 per cent. of silver would constitute an exceedingly rich product. If the silver in the ores of this region were to average no more than the fourth of one per cent. ($\frac{100 \cdot 00}{0 \cdot 25}$), the yield would be very large. Assuming this amount to be found, and estimating the specific gravity of the vein matter (consisting of quartz, calcite, blende, pyrites, &c.) at 3·0 only, each cubic fathom would weigh a little more than 20 (American) tons, and would carry 1459 Troy ounces of silver, equivalent in value to about $1,955 (gold). This is equal to nearly one hundred dollars per ton of ore, whilst the cost of raising and treating that quantity of material would probably in no case exceed ten or twelve dollars. The yield might be reduced, consequently, to the tenth of one per cent. ($\frac{100 \cdot 00}{0 \cdot 10}$), and the ore would still give large returns.

Until the nature of the ore at lower depths be definitely ascertained, the question of its proper metallurgic treatment can be scarcely entered into. If the silver be found to run chiefly in the metallic form, a large portion might be separated by simple mechanical processes, the tailings being subsequently subjected to amalgamation. If, on the other hand, the ore turn essentially to sulphide, without accompanying matters of difficult mechanical separation, the amalgamating process, with previous conversion of the ore into chloride, or a modification of the more modern processes of Augustin or Von Patera, may be found most suitable for the extraction of the metal; whilst, if much galena be present, the separation of the silver may be more economically effected, perhaps, by furnace treatment. These points must necessarily be reserved for future consideration.

CANADIAN LOCAL HISTORY.

[Since the publication of our last Number, there has been presented to the Canadian Institute, by its Secretary, Mr. L. Heyden, a valuable collection of books and pamphlets, all having reference to the early history of Canada, and its settlements, in various directions. Comprised in this acceptable donation are bound volumes to the number of sixty-two, and pamphlets to the number of forty-eight. It is proposed to form in connection with the Canadian Institute (so soon as the assent of that Body can be procured) a Canadian Local History Section, having for its special object the collection and preservation of Documents illustrative of Canadian History in all its aspects—of the volumes, pamphlets, magazines, daily and weekly newspapers, broad-sides, maps and engravings, that have been published at former periods, together with those that appear from time to time, as the years pass on.]—ED. CAN. JOURNAL.

TORONTO OF OLD:

A SERIES OF COLLECTIONS AND RECOLLECTIONS.

(Continued from page 174.)

BY THE REV. DR. SCADDING.

V.—KING STREET, FROM JOHN STREET TO YONGE STREET.

After our long stroll westward, we had purposed returning to the place of beginning by the route that constitutes the principal thoroughfare of the modern Toronto; but the associations connected with the primitive pathway on the cliff overlooking the harbour, led us insensibly back along the track by which we came. In order that we may execute our original design, we now transport ourselves at once to the point where we had intended to begin our descent of King Street. That point was the site of a building now wholly taken out of the way—the old General Hospital. Farther west on this line of road there was no object that possessed any archæological interest. The old Hospital was one of the spacious red cubical structures which (as in the case also of several other edifices, domestic and public,) speedily made their appearance when the practice of building in brick first began in the town. It had, by the direction of Dr. Grant Powell, as we have heard, the peculiarity of standing with its sides precisely east and west, north and south. At a subsequent period, it consequently had the appearance of having been jerked round bodily, the streets in the neighbourhood not being laid out with the same precise regard to the cardinal points. The building exhibited recessed galleries on the north and south sides, and a flattish hipped roof. The interior was conveniently designed. In the fever-wards here, during the terrible season of 1847, frightful scenes of suffering and death were witnessed among the newly-arrived emigrants; here it was that, in ministering to them in their distress, so many were struck down, some all but fatally, others wholly so; amongst the latter several leading medical men, and the Roman Catholic bishop, Power.

When the Houses of Parliament, at the east end of the town, were destroyed by fire in 1824, the Legislature assembled for several sessions in the General Hospital.

The neighbourhood hereabout had an open, unoccupied look in 1822. In a *Weekly Register* of the 25th of April of that year, we have an account of the presentation of a set of Colours to a militia battalion, mustered for the purpose on the road near the Hospital. "Tuesday, the 23rd instant," that paper reports, "being the anniversary of St. George, on which it has been appointed to celebrate His Majesty's birthday, George IV., [instead of the 4th of June, the fête

of the late King,] the East and West Regiments, with Capt. Button's Troop of Cavalry, which are attached to the North York Regiment, on the right, were formed in line at eleven o'clock in the forenoon, on the road in front of the Government House, and a Guard of Honour, consisting of 100 rank and file from each regiment, with officers and sergeants in proportion, under the command of Lieut. Col. FitzGibbon, were formed at a short distance in front of the centre, as the representatives of the militia of this Province, in order to receive the rich and beautiful Colours which His Majesty has been graciously pleased to command should be prepared for the late incorporated Battalion, as an honourable testimony of the high sense which His Majesty has been pleased to entertain of the zeal and gallantry of the militia of Upper Canada. At 12 o'clock, a Royal Salute was fired from the Garrison, and the Lieutenant-Governor with his staff having arrived on the ground, proceeded to review the widely-extended line; after which, taking his station in front of the whole, the band struck up the national anthem of 'God save the King.' His Excellency then dismounted, and accompanied by his staff, on foot, approached the Guard of Honour, so near as to be distinctly heard by the men; when, uncovering himself, and taking one of the Colours in his hand, in the most dignified and graceful manner, he presented them to the proper officer, with the following address:—"Soldiers! I have great satisfaction in presenting you, as the representatives of the late incorporated Battalion, with these Colours—a distinguished mark of His Majesty's approbation. They will be to you a proud memorial of the past, and a rallying-point around which you will gather with alacrity and confidence, should your active services be required hereafter by your King and Country."—His Excellency having remounted, the Guard of Honour marched, with Band playing and Colours flying, from right to left, in front of the whole line, and then proceeded to lodge their Colours at the Government House. The day was raw and cold," it is added, "and the ground being very wet and uneven, the men could neither form nor march with that precision they would otherwise have exhibited. We were very much pleased, however, with the soldier-like appearance of the Guard of Honour, and we were particularly struck by the new uniform of the officers of the West York, as being particularly well-adapted for the kind of warfare incident to a thickly-wooded country. Even at a short distance it would be difficult to distinguish the gray coat or jacket from the bole of a tree. There was a very full attendance on the field; and it was peculiarly gratifying to observe so much satisfaction on all sides. The Colours, which are very elegant, are inscribed with the word NIAGARA, to commemorate the services rendered by the Incorporated Battalion on that frontier; and we doubt not that the proud distinction which attends these banners will always serve to excite the most animating recollections, whenever it shall be necessary for them to wave over the heads of our Canadian Heroes, actually formed in battle-array against the invaders of our Country. At 2 o'clock His Excellency held a Levee, and in the evening a splendid Ball at the Government House concluded the ceremonies and rejoicings of the day."—The Lieut.-Governor on this occasion was Sir Peregrine Maitland, of whom fully hereafter.

The building on King Street known as "Government House" was originally the private residence of Mr. Chief Justice Elmsley. For many years after its purchase by the Government it was still styled "Elmsley House." As at Quebec, the correspondence of the Governor-in-Chief was dated from the "Château St. Louis," or the "Castle of St. Louis," so here, that of the Lieutenant-Governor of the Western Province was long dated from "Elmsley House." Mr. Elmsley was a brother of the celebrated classical critic and editor, Peter Elmsley, of Oxford.

On the left, opposite Government House, was a very broken piece of ground, denominated "Russell Square;" afterwards, through the instrumentality of Sir John Colborne, converted into a site for an educational Institution.--Sir John Colborne, on his arrival in Upper Canada, was fresh from the Governorship of Guernsey, one of the Channel Islands. During his administration there he had revived a decayed Public School, at present known as Elizabeth College. Being of opinion that the new country to which he had been transferred was not ripe for a University on the scale contemplated in a royal Charter which had been procured, he addressed himself to the establishment of an institution which should meet the immediate educational wants of the community.—Inasmuch as in the School which resulted—or "Minor College" as it was long popularly called—we have a transcript, more or less close, of the institution which Sir John Colborne had been so recently engaged in reviving, we add two or three particulars in regard to the latter, which may have, with some, a certain degree of interest, by virtue of the

accidental but evident relation existing between the two institutions. From a paper in Brayley's Graphic and Historical Illustrator (1834), we gather that Elizabeth College, Guernsey, was originally called the "School of Queen Elizabeth," as having been founded under Letters Patent from that sovereign in 1563, to be a "Grammar-school in which the youth of the island (*Juventus*) may be better instructed in good learning and virtue." The temple or church of the suppressed Order of Gray Friars (Friars minors or Cordeliers), with its immediate precincts, was assigned for its "use," together "with eighty quarters of wheat rent," accruing from lands in different parts of the Island, which had been given to the friars for dispensations, masses, obits, &c. By the Statutes of 1563 the school was divided into six classes; and books and exercises were appointed respectively for each; the scholars to be admitted being required "to read perfectly, and to recite an approved catechism of the Christian religion by heart." In all the six classes the Latin and Greek languages were the primary objects of instruction; but the Statutes permitted the master, at his discretion, "to add something of his own;" and even "to concede something for writing, singing, arithmetic, and a little play."—For more than two centuries the school proved of little public utility. In 1799 there was one pupil on the establishment. In 1816 there were no scholars. From that date to 1824 the number fluctuated from 15 to 29. In 1823, Sir John Colborne appointed a committee to investigate all the circumstances connected with the school, and to ascertain the best mode of assuring its future permanent efficiency and prosperity, without perverting the intention of the foundress. The end of all this was a new building (figured in Brayley) at a cost of £14,754 2*s.* 3*d.*; the foundation-stone being laid by Sir John in 1826 On August the 20th, 1829, the revived institution was publicly opened, with one hundred and twenty pupils. "On that day," we are told, "the Bailiff and Jurats of the Island, with General Ross, the Lieutenant-Governor [Sir John Colborne was now in Canada], his staff, and the public authorities, headed by a procession consisting of the Principal, Vice-Principal, and other masters and tutors of the school (together with the scholars), repaired to St. Peter's Church, where prayers were read by the Dean, Dr. Durand, and *Te Deum* and other anthems were sung. They then returned to the College, where, in the spacious Examination Hall, a crowded assembly were addressed respectively by the Bailiff and President-director [Daniel de Lisle Brock, Esq.], Colonel de Havilland, the Vice-president, and the Rev. G. Proctor, B.D., the new Principal, on the antiquity, objects, apparent prospects, and future efficiency of the institution." Under the new system the work of education was carried on by a Principal, Vice-principal, a First and Second Classical Master, a Mathematical Master, a Master and Assistant of the Lower School, a Commercial Master, two French Masters and an Assistant, a Master of Drawing and Surveying, besides extra Masters for the German, Italian, and Spanish languages, and for Music, Dancing and Fencing. The course of instruction for the day scholars, and those on the foundation, included Divinity, History, Geography, Hebrew, Greek, Latin, French, English, Mathematics, Arithmetic, and Writing, at a charge in the Upper School of £3 per quarter; and in the Lower or Preparatory School, of £1 per quarter; for Drawing and Surveying, 15*s.* per quarter. The terms for private scholars (including all College dues and subscriptions for exhibitions and prizes of medals, &c.) varied from £60 annually with the Principal, to £46 annually with the First Classical Master. The exhibitions in the revived institution were, first, one of £30 per annum for four years, founded by the Governor of Guernsey in 1826, to the best Classical scholar, a native of the Bailiwick or son of a native; secondly, four for four years, of, at least, £20 per annum, founded by subscription in 1826, to the best scholars, severally, in Divinity, Classics, Mathematics, and Modern Languages; thirdly, one for four years, of £20 per annum, founded in 1827 by Admiral Sir James Saumarez, to the best Theological and Classical scholar; fourthly, one of £20 per annum, for four years, from 1830, to the best Classical scholar, given by Sir John Colborne in 1828. There were also two, from the Lower to the Upper School, of £6 per annum, for one year or more, founded by the Directors in 1829.—The foregoing details will, as we have said, be of some interest, especially to Canadians who have received from the institution founded by Sir John Colborne in Russell Square an important part of their early training. "Whatever makes the past, the distant and the future predominate over the present, advances us in the dignity of thinking beings." So moralized Dr. Johnson amidst the ruins of Iona. On this principle, the points of agreement and difference between the educational type and antitype in this instance, will be acknowledged to be curious.—Another link of association between Guernsey and Upper Canada exists in the now fami-

liar name "Sarnia," which is the old classical name of Guernsey, given by Sir John Colborne to a township on the St. Clair river, in memory of his former government.

After Russell Square, on the left, came an undulating green field ; near the middle of it was a barn of rural aspect, cased-in with upright, unplaned boards. This field was at one time a kind of *Campus Martius* for a troop of amateur cavalry, who were instructed in their evolutions and in the use of the broadsword, by a veteran, Capt. Midford, the Goodwin of the day, at York. Nothing of note presented itself until after we arrived at the roadway which is now known as Bay Street, with the exception, perhaps, of two small rectangular edifices of red brick with bright tin roofs, dropped, as it were, one at the south-west, the other at the north-west, angle of the intersection of King and York Streets. The former was the office of the Manager of the Clergy-Reserve Lands ; the latter, that of the Provincial Secretary and Registrar. They are noticeable simply as being specimens, in solid material, of a kind of minute cottage that for a certain period was in fashion in York and its neighbourhood ; little square boxes, one storey in height, and without basement ; looking as if, by the aid of a ring at the apex of the four-sided roof, they might, with no great difficulty, be lifted up, like the hutch provided for Gulliver by his nurse Glundalclitch, and carried bodily away.

As we pass eastward of Bay Street, the memory comes back of Franco Rossi, the earliest scientific confectioner of York, who had on the south side, near here, a depôt, ever fragrant and ambrosial. In his specialties he was a superior workman. From him were procured the fashionable bridecakes of the day ; as also the noyeau, parfait-amour, and other liqueurs, set out for visitors on New Year's Day. Rossi was the first to import hither good objects of art : fine copies of the Laocoon, the Apollo Belvidere, the Perseus of Canova, with other classic groups and figures, sculptured in Florentine alabaster, were disseminated by him in the community. Rossi is the Italian referred to by the author of "Cyril Thornton" in his "Men and Manners in America," where speaking of York, visited by him in 1832, he says : "In passing through the streets, I was rather surprised to observe an *affiche* intimating that ice-creams were to be had within. The weather being hot, I entered, and found the master of the establishment to be an Italian. I never ate better ice at Grange's"—some fashionable place in London, we suppose. Our outward signs of civilization must have been meagre when a chance visitor recorded his surprise at finding ice-cream procurable in such a place.

Great enthusiasm, we remember, was created, far and near, by certain panes of plate glass with brass divisions between them, which, at a period a little later than (Capt. Hamilton's) Cyril Thornton's visit, suddenly ornamented the windows of Mr. Beckett's Chemical Laboratory, close by Rossi's. Even Mrs. Jameson, in her book of "Winter Studies and Summer Rambles," referring to the shop-fronts of King Street, pronounces, in a naïve, English, watering-place way, "that of the apothecary" to be "worthy of Regent Street in its appearance."

A little farther on, still on the southern side, was the first place of public worship of the Wesleyan Methodists. It was a long, low, wooden building, running north and south, and placed a little way back from the street. Its dimensions in the first instance, as we have been informed by Mr. Petch, who was engaged in its erection, were 40 by 40 feet. It was then enlarged to 40 by 60 feet. In the gable end towards the street were two doors, one for each sex. Within, the custom obtained of dividing the men from the women ; the former sitting on the right hand of one entering the building ; the latter on the left. This separation of the sexes in places of public worship was an oriental custom, still retained among the Jews. It also existed, down to a recent date, in some English Churches. Among articles of Inquiry sent down from a Diocesan to churchwardens, we have seen the query : "Do men and women sit together indifferently and promiscuously ? or, as the fashion was of old, do men sit together on one side of the church, and women upon the other ?" (In English churches the usage was the opposite of that indicated above : the north side, that is, the left on entering, was the place of the women ; and the south, that of the men.) In 1688, we have Sir George Wheler, in his "Account of the Churches of the Primitive Christians," speaking of this custom, which he says prevails also "in the Greek Church to this day :" he adds that it "seems not only very decent, but nowadays, since wickedness so much abounds, highly necessary ; for the general mixture," he continues, "of men and women in the Latin Church is notoriously scandalous ; and little less," he says, "is their sitting together in the same pews in our London churches."—The Wes-

eyan chapel in King Street ceased to be used in 1833. It was converted afterwards for a time into a "Theatre Royal."

Jordan Street preserves one of the names of Mr. Jordan Post, owner of the whole frontage extending from Bay Street to Yonge Street. The name of his wife is preserved in "Melinda Street," which traverses his lot, or rather block, from east to west, south of King Street. Two of his daughters bore respectively the unusual names of Sophronia and Desdemona. Mr. Post was a tall New-Englander of grave address. He was, moreover, a clockmaker by trade, and always wore spectacles. From the formal cut of his apparel and hair, he was, quite erroneously, sometimes supposed to be of the Menonist or Quaker persuasion.

VI.—KING STREET, FROM YONGE STREET TO CHURCH STREET.

Where Yonge Street crosses King Street, forming at the present day an unusually noble *carrefour*, as the French would say, or rectangular intersection of thoroughfares, as we are obliged to word it, there was, for a considerable time, but one solitary house—at the north-east angle; a longish, low, one-storey, respectable wooden structure, painted white, with paling in front, and large willow trees: it was the home of Mr. Dennis, formerly a shipbuilder at Kingston. To the eastward of this, on the same side, at an early period, was an obscure frame building of the most ordinary kind, whose existence is recorded simply for having been temporarily the District Grammar School, before the erection of the regular building on the Grammar School lot. On the opposite side, still passing on towards the east, was the Jail. This was a squat unpainted wooden building, with hipped roof, concealed from persons passing in the street by a tall cedar stockade, such as those which we see surrounding a Hudson's Bay post or a military wood-yard. At the outer entrance hung a billet of wood suspended by a chain, communicating with a bell within; and occasionally Mr. Parker, the custodian of the place, was summoned, through its instrumentality, by persons not there on legitimate business. We have a recollection of a clever youth, an immediate descendant of the great commentator on British Law, and afterwards himself distinguished at the Upper Canadian bar, who was severely handled by Mr. Parker's son, on being caught in the act of pulling at this billet, with the secret intention of running away after the exploit.

The English Criminal Code, as it was at the beginning of the century, having been introduced with all its enormities, public hangings were frequent at an early period in the new Province. A shocking scene is described as taking place at an execution in front of the old Jail at York. The condemned refuses to mount the scaffold. On this, the moral-suasion efforts of the sheriff amount to the ridiculous, were not the occasion so seriously tragic. In aid of the sheriff, the officiating chaplain steps more than once up the plank set from the cart to the scaffold, to shew the facility of the act, and to induce the man to mount in like manner; the condemned demurs, and openly remarks on the obvious difference in the two cases. At last the noose is adjusted to the wretched culprit, where he stands. The cart is withdrawn, and a deliberate strangling ensues.

In a certain existing account of steps taken in 1811 to remedy the dilapidated and comfortless condition of this Jail, we get a glimpse of York, commercially and otherwise, at that date. In April, 1811, the sheriff, Beikie, reports to the magistrates at Quarter Sessions "that the sills of the east cells of the Jail of the Home District are completely rotten; that the ceilings in the debtors' rooms are insufficient; and that he cannot think himself safe, should necessity oblige him to confine any persons in said cells or debtors' rooms." An order is given in May to make the necessary repairs; but certain spike-nails are wanted of a kind not to be had at the local dealers' in hardware. The chairman is consequently directed to "apply to his Excellency the Lieutenant-Governor, that he will be pleased to direct that the spike-nails be furnished from the King's stores, as there are not any of the description required to be purchased at York." A memorandum follows to the effect that on the communication of this necessity to his Excellency, "the Lieutenant-Governor ordered that the Clerk of the Peace do apply for the spike-nails officially in the name of the Court: which he did," the memorandum adds, "on the 8th of May, 1811, and received an answer on the day following, that an order had been issued that day for 1500 spike-nails, for the repair of the Home District Jail: the nails," it is subjoined, "were received by carpenter Leach in the month of July following."—Again: in December, 1811, Mr. Sheriff Beikie sets forth to the magistrates in Session, that "the prisoners in the cells of the

Jail of the Home District suffer much from cold and damp, there being no method of communicating heat from the chimneys, nor any bedsteads to raise the straw from the floors, which lie nearly, if not altogether, on the ground." He accordingly suggests that "a small stove in the lobby of each range of cells, together with some rugs or blankets, will add much to the comfort of the unhappy persons confined." The magistrates authorize the supply of the required necessaries, and the order is marked "instant." (The month, we are to notice, was December.) At a late period, there were placed about the town a set of posts having relation to the Jail. They were distinguished from the ordinary rough posts, customary then at regular intervals along the sidewalks, by being of turned wood, with spherical tops, the lower part painted a pale blue; the upper, white. These were the "limits"—the *certi denique fines*—beyond which, theoretical *détenus* for debt were not allowed to extend their walks.

Leaving the picketted enclosure of the Prison, we soon arrived at an open piece of ground on the opposite (north) side of the street,—afterwards known as the "Court House Square." One of the many rivulets or water-courses that traversed the site of York passed through it, flowing in a deep serpentine ravine, a spot to be remembered by the youth of the day as affording, in the winter, facilities for skating and sliding, and audacious exploits on "leather ice." In this open space, a Jail and Court House of a pretentious character, but of poor architectural style, were erected in 1824. The two buildings, which were of two storeys, and exactly alike, were placed side by side, a few yards back from the road. Their gables were to the south, in which direction were also the chief entrances. The material was red brick. Pilasters of cut stone ran up the principal fronts, and up the exposed or outer sides of each edifice. At these sides, as also on the inner and unornamented sides, were lesser gables, but masked by the portion of the wall that rose in front of them, not to a point, but finishing square in two diminishing stages, and sustaining chimneys. It was intended originally that lanterns should have surmounted and given additional elevation to both buildings, but these were discarded, together with tin as the material of the roofing, with a view to cutting down the cost, and thereby enabling the builder to make the pilasters of cut stone instead of "Roman cement." John Hayden was the contractor. The cost, as reduced, was to be £3,890 for the two edifices.

We extract from the *Canadian Review* for July, 1824, published by H. H. Cunningham, Montreal, a short account of the commencement of the new buildings: "On Saturday, the 24th instant, [April, 1824,] his Excellency the Lieutenant-Governor, attended by his staff, was met by the Honorable the Members of the Executive Council, the Judges of the Court of King's Bench, and the Gentlemen of the Bar, with the Magistrates and principal inhabitants of York, in procession, for the purpose of laying the foundation-stone of the new Jail and Court House about to be erected in this Town.—A sovereign and half-sovereign of gold, and several coins of silver and copper, of the present reign, together with some newspapers and other memorials of the present day, were deposited in a cavity of the stone, over which a plate of copper, bearing an appropriate inscription, was placed; and after his Excellency had given the first blow, with a hammer handed to him for the purpose, the ceremony concluded with several hearty cheers from all who were present.—If the question were of any real importance," the writer adds, "we might have the curiosity to inquire why the deposit was made in the *south-east*, rather than in the *north-east* corner of the building?"—a query that indicates, as we suppose, a deviation from orthodox masonic usage.—In one of the lithographic views published in 1836 by Mr. J. Young, the Jail and Court House, now spoken of, are shewn. Among the objects inserted to give life to the scene, the artist has placed in the foreground a country waggon with oxen yoked to it, in primitive fashion.

After 1825, the open area in front of the Jail and Court House became the "Public Place" of the town. Crowds filled it at elections and other occasions of excitement. We have here witnessed several scenes characteristic of the times in which they occurred. We here once saw a public orator run away with, in the midst of his harangue. This was Mr. Jesse Ketchum, who was making use of a farmer's waggon as his rostrum or platform, when the vehicle was suddenly laid hold of, and wheeled rapidly down King Street, the speaker maintaining his equilibrium in the meanwhile with difficulty. Mr. Ketchum was one of the most benevolent and beneficent of men. We shall have occasion to refer to him hereafter.—It was on the same occasion, we believe, that we saw Mr. W. L. McKenzie assailed by the missiles which mobs usually adopt. From this spot we had previously seen the same person, after one of his re-elections, borne aloft

in triumph, on a kind of pyramidal car, and wearing round his neck and across his breast a massive gold chain and medal (both made of molten sovereigns), the gift of his admirers and constituents: in the procession, at the same time, was a printing-press, working as it was conveyed along in a low sleigh, and throwing off handbills, which were tossed, right and left, to the accompanying crowd in the street.

The existing generation of Upper Canadians, with the lights which they now possess, see pretty clearly, at the present moment, that the agitator just named, and his party, were not, in the abstract, by any means so bad as they seemed: that, in fact, the ideas which they sought to propagate are the only ones practicable in the successful government of modern men. Is there a reader nowadays that sees anything very startling in the enunciation of the following principles?—"The control of the whole revenue to be in the people's representatives; the Legislative Council to be elective; the representation in the House of Assembly to be as equally proportioned to the population as possible; the Executive Government to incur a real responsibility; the law of primogeniture to be abolished; impartiality in the selection of juries to be secured; the Judiciary to be independent; the military to be in strict subordination to the civil authorities; equal rights to the several members of the community; every vestige of Church-and-State union to be done away; the lands and all the revenues of the country to be under the control of the country; and education to be widely, carefully and impartially diffused; to these may be added the choice of our own Governors."—These were the political principles sought to be established in the governments of Canada by the party referred to, as set forth in the terms just given (almost *verbatim*) in Patrick Swift's Almanac, a well-known popular, annual *brochure* of Mr. McKenzie's. It seems singular now, in the retrospect, that doctrines such as these should have created a ferment. But there is this to be said: it does not appear that there were, at the time, in the ranks of the party in power, any persons of very superior intellectual gifts or of a wide range of culture or historical knowledge: so that it was not likely that, on that side, there would be a ready relinquishment of political traditions, of inherited ideas, which their possessors had never dreamt of rationally analysing, and which they deemed it all but treason to call into question. And moreover it is to be remembered that the chief propagandist of the doctrines of reform, although very intelligent and ready of speech, did not possess the dignity and repose of character which give weight to the utterances of public men. Hence, with the persons who really stood in need of instruction and enlightenment, his words had an irritating, rather than a conciliatory and convincing effect. This was a fault which it was not in his power to remedy. For his microscopic vision and restless temperament, while they fitted him to be a very clever local reformer, a very clever local editor, unfitted him for undertaking the grand *rôle* of a national statesman, or the heroic conductor of a revolution. Accordingly, although the principles advocated by him finally obtained the ascendancy, posterity regards him only as the Wilkes, the Cobbett, or the Hunt of his day, in the annals of his adopted country. In the interval between the outbreak or feint at outbreak in 1838, and 1850, the whole Canadian community made a great advance in general intelligence, and statesmen of a genuine quality began to appear in our Parliaments.

Prior to the period of which we have just been speaking, a name much in the mouths of our early settlers was that of Robert Gourlay. What we have to say in respect to him, in this our retrospect of the past, will perhaps be in place here. Nothing could be more laudable than Mr. Gourlay's intentions at the outset. He desired to publish a statistical account of Canada, with a view to the promotion of emigration. To inform himself of the actual condition of the young colony, he addressed a series of questions to persons of experience and intelligence in every township of Upper Canada. These questions are now lying before us: they extend to the number of thirty-one. There are none of them that a modern reader would pronounce ill-judged or irrelevant. But here again it is easy to see that personal character and temperament marred the usefulness of a clever man. His inordinate self-esteem and pugnaciousness, insufficiently controlled, speedily rendered him offensive, especially in a community constituted as that was in the midst of which he had suddenly lighted; and drove, naturally and of necessity, his opponents to extreme measures in self-defence, and himself to extreme doctrines by way of retaliation: thus he became overwhelmed with troubles from which the tact of a wise man would have saved him. But for Gourlay, as the event proved, a latent insanity was an excuse.

It is curious to observe that, in 1818, Gourlay, in his heat against the official party, whose headquarters were at York, threatened that town with extinction; at all events, with the oblit-

eration of its name, and the transmutation thereof into that of TORONTO. In a letter to the Niagara *Spectator*, he says:—"The tumult excited stiffens every nerve and redoubles the proofs of necessity for action. If the higher classes are against me, I shall recruit among my brother farmers, seven in eight of whom will support the cause of truth. If one year does not make Little York surrender to us, then we'll batter it for two; and should it still hold out, we have ammunition for a much longer seige. We shall raise the wind against it from Amherstburgh and Quebec—from Edinburgh, Dublin and London. It must be levelled to the very earth, and even its name be forgotten in *Toronto*."

But to return for a moment to Mr. McKenzie. On the steps of the Court House, which we are to suppose ourselves now passing, we once saw him under circumstances that were deeply touching. Sentence of death had been pronounced on a young man once employed in his printing-office. He had been vigorously exerting himself to obtain from the Executive a mitigation of the extreme penalty. The day and even the hour for the execution had arrived; and no message of reprieve had been transmitted from Stamford, across the Lake, where the Lieutenant-Governor was then residing. As he came out of the Sheriff's room, after receiving the final announcement that there could be no further delay, the white collars on each side of his face were wet through and through with the tears that were gushing from his eyes and pouring down his cheeks. He was just realizing the fact that nothing further could be done; and in a few moments afterwards the execution actually took place.

We approach comparatively late times when we speak of the cavalcade which passed in grand state the spot now under review, when Messrs. Dunn and Buchanan were returned as members for the town. In the pageant on that occasion there was conspicuous a train of railway carriages, drawn, of course, by horse power, with the inscription on the sides of the carriages—"Do you not wish you may get it?"—the allusion being to the Grand Trunk, which was then only a thing *in posse*. And still referring to processions associated in our memory with Court House Square, the recollection of another comes up, which once or twice a year used formerly to pass down King Street on a Sunday. The townspeople were familiar enough with the march of the troops of the garrison to and from Church, to the sound of military music, on Sundays. But on the occasions now referred to, the public eye was drawn to a spectacle of an opposite character: namely, to a procession of the "Children of Peace," so-called, through the street. These were a local off-shoot of the Society of Friends, the followers of Mr. David Willson, who had his headquarters at Sharon, in Whitchurch, where he had built a "Temple," a large wooden structure, painted white, and resembling a high-piled house of cards. Periodically he deemed it proper to make a demonstration in town. His disciples and friends, dressed in their best, mounted their waggons and solemnly passed down Yonge Street, and then on through some frequented thoroughfare of York to a place previously announced, where the prophet would preach. His topic was usually "Public Affairs and their Abuses." The text of all his discourses might, in effect, be the following mystic sentence, extracted from the popular periodical, already quoted—"Patrick Swift's Almanac": "The backwoodsman, while he lays the axe to the root of the oak in the forests of Canada, should never forget that a base basswood is growing in this his native land, which, if not speedily girdled, will throw its dark shadows over the country, and blast his best exertions. Look up, reader, and you will see the branches—the Robinson branch, the Powell branch, the Jones branch, the Strachan branch, the Boulton twig, &c. The farmer toils, the merchant toils, the labourer toils, and the family compact reap the fruit of their exertions." (Almanac for 1834.) Into all the points here suggested Mr. Willson would enter with great zest. When waxing warm in his discourse, it was his practice suddenly, without making any pause, to throw off his coat, and proceed in his shirt-sleeves. His address was divided into sections, between which "hymns of his own composing" were sung by a company of females dressed in white, sitting on one side, accompanied by a band of musical instruments on the other. Considerable crowds assembled on these occasions: and once a panic arose as preaching was going on in the public room of Lawrence's hotel: the joists of the floor were heard to crack; a rush was made to the door, and several leaped out of the windows.—A small brick school-house on Berkeley Street was also a place where Willson sometimes sought to get the ear of the general public.—Captain Bonnycastle, in "Canada as it Was, Is, and May Be," i. 285, thus discourses of David Willson, in a strain somewhat too severe and satirical; but his words serve to shew opinions which widely prevailed at the time he wrote: "At a short

distance from Newmarket," the Captain says, "which is about three miles to the right of Yonge Street, near its termination at the Holland Landing, on a river of that name running into Lake Simcoe, is a settlement of religious enthusiasts, who have chosen the most fertile part of Upper Canada, the country near and for miles round Newmarket, for the seat of their earthly tabernacle. Here numbers of deluded people have placed themselves under the temporal and spiritual charge of a high priest, who calls himself David. His real name is David Willson. The Temple (as the building appropriated to the celebration of their rites is called,) is served by this man, who affects a primitive dress, and has a train of virgin-ministrants clothed in white. He travels about occasionally to preach at towns and villages, in a waggon, followed by others, covered with white tilt-cloths; but what his peculiar tenets are beyond that of dancing and singing, and imitating David the King, I really cannot tell, for it is altogether too farcical to last long: but Mr. David seems to understand clearly, as far as the temporal concerns of his infatuated followers go, that the old-fashioned signification of *meum* and *tuum* are religiously centered in his own *sanctum*. It was natural that such a field should produce tares in abundance." The following notice of the "Children of Peace" occurs in Patrick Swift's Almanac for 1834, penned, probably, with an eye to votes in the neighbourhood of Sharon, or Hope, as the place is here called. "This society," the Almanac reports, "numbers about 280 members in Hope, east of Newmarket. They have also stated places of preaching, at the Old Court House, York, on Yonge Street, and at Markham. Their principal speaker is David Willson, assisted by Murdoch McLeod, Samuel Hughes, and others. Their music, vocal and instrumental, is excellent, and their preachers seek no pay from the Governor out of the taxes." On week-days, Willson was often to be seen, like any other industrious yeoman, driving into town his own waggon, loaded with the produce of his farm; dressed in home-spun, as the "borel folk" of Yonge Street generally were: in the axis of one eye there was a slight divergency.—The expression "Family Compact" occurring above, borrowed from French and Spanish History, appears also in the General Report of Grievances, in 1835, where this sentence is to be read: "The whole system [of conducting Government without a responsible Executive] has so long continued virtually in the same hands, that it is little better than a family compact," p. 43.

After the Court House Square came the large area attached to St. James's Church, to the memories connected with which we shall presently devote some space; as also to those connected with the region to the north, formerly the play-ground of the District Grammar School, and afterwards transformed into March Street and its purlieus.

At the corner on the south side of King Street, just opposite the Court House, was the clock-and-watch-repairing establishment of Mr. Charles Clinkunbroomer. To our youthful fancy, the general click and tick usually to be heard in an old-fashioned watchmaker's place of business, was in some sort expressed by the name Clinkunbroomer. But in old local lists we observe the orthography of this name to have been Klinkenbrunner, which conveys another idea. Mr. Clinkunbroomer's father, we believe, was attached to the army of General Wolfe, at the taking of Quebec. In the early annals of York numerous Teutonic names are observable. Among jurymen and others, at an early period, we meet with Nicholas Klinkenbrunnar, Gerhard Kuch, John Vanzantee, Barnabas Vanderburgh, Lodowick Weidemann, Francis Frieder, Peter Hultz, Jacob Wintersteen, John Shunk, Leonard Klink, and so on. So early as 1795 Liancourt speaks of a migration hither of German settlers from the other side of the Lake. A number of German settlers collected at Hamburg, an agent there, he says, had brought out to settle on "Captain Williamson's Demesne" in the State of New York. After subsisting some time there at the expense of Capt. W. (who, it was stated, was really the representative of one of the Pulteneys in England), they decamped in a body to the north side of the Lake, and especially to York and its neighbourhood, at the instigation of one *Baty*, as the name reads in Liancourt, and "gained over, if we may believe common fame," Liancourt says, "by the English;" gained over, rather, it is likely, by the prospect of acquiring freehold property for nothing, instead of holding under a patroon or American feudal lord. Probably it was to the reports given by these refugees, that a message sent in 1794, by Governor Simcoe to Capt. Williamson, was due. Capt. W., who appears to have acquired a supposed personal interest in a large portion of the State of New York, was opening settlements on the inlets on the south side of Lake Ontario, known as Ierondequat and Sodus Bay. "Last year," Liancourt informs us, "General Simcoe, Governor

of Upper Canada, who considered the Forts of Niagara and Oswego, * * * as English property, together with the banks of Lake Ontario, sent an English officer to the Captain, with an injunction, not to persist in his design of forming the settlements. The Captain," we are told, "returned a plain and spirited answer, yet nevertheless conducted himself with a prudence conformable to the circumstances. All these difficulties, however," it is added, "are now removed by the prospect of the continuance of peace, and still more so by the treaty [of amity between France and the United States] newly concluded.

VII.—KING STREET: DIGRESSION SOUTHWARDS AT CHURCH STREET: MARKET LANE.

Across Church Street from Clinkunbroomer's were the wooden buildings already referred to, as having remained long in a partially finished state, being the result of a premature speculation. From this point we are induced to turn aside from our direct route for a few moments, attracted by a street which we see a short distance to the south, namely, Market Lane, or Colborne Street, as the modern phraseology is. In this passage was, in the olden time, the Masonic Hall, a wooden building of two storeys. To the young imagination this edifice seemed to possess considerable dignity, from being surmounted by a cupola; the first structure in York that ever enjoyed such a distinction. This ornamental appendage supported above the western gable, by slender props, (intended in fact for the reception of a bell, which, so far as our recollection extends, was never supplied), would appear insignificant enough now; but it was the first budding of the architectural ambition of a young town, which leads at length to turrets, pinnacles, spires and domes. A staircase on the outside led to the upper storey of the Masonic Hall. In this place were held the first meetings of the first Mechanics' Institute, organized under the auspices of Moses Fish, a builder of York, and other lovers of knowledge of the olden time. Here were attempted the first popular lectures. Here we remember hearing—certainly some forty years ago—Mr. John Fenton read a paper on the manufacture of steel, using diagrams in illustration: one of them shewed the magnified edge of a well-set razor, the serrations all sloping in one direction, by which it might be seen, the lecturer remarked, that unless a man, in shaving, gave the instrument a particular movement, he was likely "to get into a scrape."—The lower part of the Masonic Hall was for a considerable while used as a school, kept successively by Mr. Stewart and Mr. Appleby; and afterwards by Mr. Caldicott.

At the corner of Market Lane, on the north side, towards the Market, was Phair's Hotel, an ordinary white frame building. The first theatre of York was extemporized in the ball-room of this house. When fitted up for dramatic purposes, that apartment was approached by a stairway on the outside. Here companies performed, under the management, at one time, of Mr. Archbold; at another, of Mr. Talbot; at another, of Mr. Vaughan. The last-named manager, while professionally at York, lost a son by drowning in the Bay. We well remember the poignant distress of the father at the grave, and that his head was bound round on the occasion with a white bandage or napkin. Mrs. Talbot was a great favourite. She performed the part of Cora in Pizarro, and that of Little Pickle, in a comedy of that name, if our memory serves us. Pizarro, Barbarossa, or the Siege of Algiers, Ali Baba, or the Forty Thieves, the Lady of the Lake, the Miller and his Men, were among the pieces here represented. The body-guard of the Dey of Algiers, we remember, consisted of two men, who always came in with military precision just after the hero, and placed themselves in a formal manner at fixed distances behind him, like two sentries. They were in fact soldiers from the garrison, we think. All this appeared very effective.—The dramatic appliances and accessories at Phair's were of the humblest kind. The dimensions of the stage must have been very limited: the ceiling of the whole room, we know, was low. As for orchestra—in those days, the principal instrumental artist of the town was Mr. Maxwell, who, well-remembered for his quiet manners, for the shade over one eye, in which was some defect, and for his homely skill on the violin, was generally to be seen and heard, often alone, but sometimes with an associate or two, here, as at all other entertainments of importance, public and private. Nevertheless, at that period, to an unsophisticated yet active imagination, innocent of acquaintance with more respectable arrangements, everything seemed charming; each scene, as the bell rang and the baize drew up, was invested with a magical glamour, similar in kind, if not equal in degree, to that which, in the days of our grand-

fathers, ere yet the modern passion for real knowledge had been awakened, fascinated the young Londoner at Drury Lane. And how curiously were the illusions of the mimic splendors sometimes in a moment broken, as if to admonish the inexperienced spectator of the facts of real life. In the performance of Pizarro, it will be remembered that an attempt is made to bribe a Spanish soldier at his post. He rejects and flings to the ground what is called "a wedge of massive gold:"—we recollect the *sound* produced on the boards of the stage in Phair's by the fall of this wedge of massive gold: it instantly betrayed itself by this, as well as by its nimble rebound, to be, of course, a gilded bit of wood. And it is not alone at obscure village performances that such disclosures occur. At an opera in London, where all appearances were elaborately perfect, we recollect the accidental fall of a goblet which was supposed to be of heavy chased silver, and also filled with wine—a contretemps occasioned by the giddiness of the lad who personated a page: two things were at once clear: the goblet was not of metal, and nothing liquid was contained within it: which recalls a mishap associated in our memory with a visit to the Argentina at Rome, many years ago: this was the coming off of a wheel from the chariot of a Roman general, at a critical moment: the descent on this occasion from the vehicle to the stage was a true step from the sublime to the ridiculous; for the audience observed the accident, and persisted in their laugh in spite of the heroics which the great commander proceeded to address, in operatic style, to his assembled army.

It was in this same assembly-room at Phair's, dismantled of its theatrical furniture, that a celebrated fancy ball was given, in 1827, conjointly by Mr. Galt, Commissioner of the Canada Company, and Lady Mary Willis, wife of Mr. Justice Willis. On that occasion the interests of the Company were to some extent studied in the ornamentation of the room, its floor being decorated with an immense representation, in chalks or water-colour, of the arms of the association: the supporters of the shield were of colossal dimensions: two lions, rampant, bearing flags turning opposite ways: below, on the riband, in characters proportionably large, was the motto of the Company, "Non mutat genus solum." The sides and ceiling of the room, with the passages leading from the front door to it, were covered throughout with branchlets of the hemlock-spruce: nestling in the greenery of this perfect bower were innumerable little coloured lamps, each containing a floating light. Here, for once, the potent, grave and reverend seigniors of York, along with their sons and daughters, indulged in a little insanity. Lady Mary Willis appeared as Mary, Queen of Scots; the Judge himself, during a part of the evening, was in the costume of an old woman; Miss Willis, the clever amateur equestrienne, was Folly, with cap and bells; Dr. W. W. Baldwin was a Roman senator; his two sons, William and St. George, were the Dioscuri; his nephew, Augustus Sullivan, was Puss in Boots; Dr. Grant Powell was Dr. Pangloss; Mr. Kerr, a real Otchipway chief, at the time a member of the Legislature, made a magnificent Kentucky backwoodsman. Mr. Gregg, of the Commissariat, was there as Othello. The Kentuckian (Kerr), professing to be struck with the many fine points of the Moor, as regarded from *his* point of view, persisted, throughout the evening, in setting up a claim to ownership—an idea naturally much resented by Othello. Col. Givins, his son Adolphus, Raymond Baby, and others, were Indian chiefs of different tribes, who more than once indulged in the war-dance. Mr. Buchanan, son of the British Consul at New York, was Darnley; Mr. Thompson, of the Canada Company's office, was Rizzio; Mr. G. A. Barber was a wounded sailor recently from Navarino (that untoward event had lately taken place); his arm was in a sling; he had suffered in reality a mutilation of the right hand by an explosion of gunpowder on the 5th of November.

Mr. Galt was only about three years in Canada; but this short space of time sufficed to enable him to lay the foundations of the Canada Company wisely and well, as is shewn by its duration and prosperity. The feat was not accomplished without some antagonism springing up between himself and the local governmental authorities, whom he was inclined to treat rather haughtily. It is a study to observe how frequently, at an early stage of Upper Canadian society, a mutual antipathy manifested itself between visitors from the transatlantic world, tourists and settlers (intending and actual), and the first occupants of such places of trust and emolument as then existed. It was a feeling that grew partly out of personal considerations, and partly out of difference of opinion in regard to public policy. A gulf thus began at an early period to open between two sections of the community, which widened painfully for a time in after years;—a fissure, which, at its first appearance, a little philosophy on both sides would have closed up.

Men of intelligence, who had risen to position and acquired all their experience in a remote, diminutive settlement, might have been quite sure that their grasp of great imperial and human questions, when they arose, would be very imperfect; they might, therefore, rationally have rejoiced at the accession of new minds and additional light to help them in the day of necessity. And on the other hand, the fresh immigrant or casual visitor, trained to maturity amidst the combinations of an old society, and possessing a knowledge of its past, might have comprehended thoroughly the exact condition of thought and feeling in a community such as that which he was approaching, and so might have regarded its ideas with charity, and spoken of them in a tone conciliatory and delicate. On both sides, the maxim *Tout comprendre, c'est tout pardonner* would have had a salutary and composing effect, "for," as the author of Realmah well says, "in truth, one would never be angry with anybody, if one understood him or her thoroughly." We regret that we cannot recover two small "paper pellets of the brain," of this period, arising out of the discussions connected with the appointment of an outsider (Mr. Justice Willis) to the Bench of Upper Canada. They would have been illustrative of the times. They were in the shape of two advertisements, one in reply to the other, in a local Paper: one was the elaborate title-page of a pamphlet "shortly to appear," with the motto "Meliora sperans"; the other was an exact counterpart of the first, only in reversed terms, and bearing the motto "Deteriora timens." In the earlier stages of all colonies it is obviously inevitable that appointments *ab extra* to public office must occasionally, and even frequently, be made. Local aspirants are thus subject to disappointments; and men of considerable ability may now and then feel themselves overshadowed, and imagine themselves depressed, through the introduction of talent transcending their own. Some manifestations of discontent and impatience may thus always be expected to appear. But in a few years this state of things comes naturally to an end. In no public exigency is there any longer a necessity to look to external sources for help. A home supply of men duly qualified to serve "Church and State" is legitimately developed, as we see in the United States, among ourselves, and in all the other larger settlements from the British Islands. The *dénouement* of the Willis-trouble may be gathered from the following notice in the *Gazette* of Thursday, July 17th, 1828, now lying before us: "His Excellency the Lieutenant-Governor has been pleased to appoint, by Commission under the Great Seal, Christopher Alexander Hagerman, Esq., to be Judge in His Majesty's Court of King's Bench for this Province, in the room of the Hon. John Walpole Willis, *removed*, until the King's pleasure shall be signified."

Lady Mary Willis, associated with Mr Galt in the Fancy Ball just spoken of, was a daughter of the Earl of Strathmore. In the *Canadian Literary Magazine* for April, 1833, there is a notice of Mr. Galt, with a full-length pen-and-ink portrait, similar to those which used formerly to appear in *Fraser*. In front of the figure is a bust of Lord Byron; behind, on a wall, is a Map shewing the Canadian Lakes, with YORK marked conspicuously. From this sketch we learn that "Mr. Galt always conducted himself as a man of the strictest probity and honour. He was warm in his friendships, and extremely hospitable in his Log Priory at Guelph, and thoroughly esteemed by those who had an opportunity of mingling with him in close and daily intimacy. He was the first to adopt the plan of opening roads before making a settlement, instead of leaving them to be cut, as heretofore, by the settlers themselves—a plan which, under the irregular and patchwork system of settling the country then prevailing, has retarded the improvement of the Province more, perhaps, than any other cause." In his Autobiography Mr. Galt refers to this notice of himself in the *Canadian Literary Magazine*, especially in respect to an intimation given therein that contemporaries at York accused him of "playing Captain Grand" occasionally, and "looking down on the inhabitants of Upper Canada." He does not affect to say that it was not so; he even rather unamiably adds: "The fact is, I never thought about them [i. e., these inhabitants], unless to notice some ludicrous peculiarity of individuals." The same tone is assumed when recording the locally famous entertainment, given by himself and Lady Willis, as above described. Having received a hint that the colonelcy of a militia regiment might possibly be offered him, he says: "This information was unequivocally acceptable; and, accordingly," he continues, "I resolved to change my reclusiveness into something more cordial towards the general inhabitants of York. I therefore directed one of the clerks [the gentleman who figured as Rizzio, doubtless], to whom I thought the task might be agreeable, to make arrangements for giving a general Fancy Ball to all my acquaintance, and the principal inhabitants. I

could not be troubled," he observes, "with the details myself, but exhorted him to make the invitations as numerous as possible." In extenuation of his evident moodiness of mind, it is to be observed that his quarters at York were very uncomfortable. "The reader is probably acquainted," he says in his Autobiography, "with the manner of living in the American hotels, but without experience he can have no right notion of what in those days (1827,) was the condition of the best tavern in York. It was a mean two-storey house; the landlord, however, [this was Mr. Phair,] did," he says, "all in his power to mitigate the afflictions with which such a domicile was quaking, to one accustomed to quiet." Such an impression had his unfortunate accommodation at York made on him, that, in another place, when endeavouring to describe Dover, in Kent, as a dull place, we have him venturing to employ such extravagant language as this: "Everybody who has ever been at Dover knows that it is one of the vilest [hypochondriacal] haunts on the face of the earth, except Little York in Upper Canada." We notice in Leigh Hunt's *London Journal* for June, 1834, some verses entitled "Friends and Boyhood," written by Mr. Galt, in sickness. They will not sound out of place in a paper of early reminiscences:

"Talk not of years! 'twas yesterday
We chased the hoop together,
And for the plover's speckled egg
We waded through the heather.

"The green is gay where gowans grow,
'Tis Saturday—oh! come,
Hark! hear ye not our mother's voice,
The earth?—she calls us home.

"Have we not found that fortune's chase
For glory or for treasure,
Unlike the rolling circle's race,
Was pastime, without pleasure?

"But seize your glass—another time
We'll think of clouded days—
I'll give a toast—fill up, my friend!
Here's 'Boys and merry plays!'"

But Market Lane and its memories detain us too long from King Street. We now return to the point where Church Street intersects that thoroughfare.

VIII.—KING STREET: ST. JAMES'S CHURCH.

The first Church of St. James, at York, was a plain structure of wood, placed some yards back from the road. Its gables faced east and west, and its solitary door was at its western end, and was approached from Church Street. Its dimensions were 50 by 40 feet. The sides of the building were pierced by two rows of ordinary windows, four above and four below. Altogether it was, in its outward appearance, simply, as a contemporary American "Geographical View of the Province of Upper Canada," now before us, describes it, a "meeting-house for Episcopalians." The work referred to, which was written by a Mr. M. Smith, before the war of 1812, thus depicts York: "This village," it says, "is laid out after the form of Philadelphia, the streets crossing each other at right angles; though the ground on which it stands is not suitable for building. This at present," the notice continues, "is the seat of Government, and the residence of a number of English gentlemen. It contains some fine buildings, though they stand scattering, among which are a Court-house, Council-house, a large brick building, in which the King's store for the place is kept, and a meeting-house for Episcopalians; one printing, and other offices." The reservation of land in which the primitive St. James's Church stood, long remained plentifully covered with the original forest. In a wood-cut from a sketch taken early in the present century, prefixed to the "Annals of the Diocese of Toronto," the building is represented as being in the midst of a great grove, and stumps of various sizes are visible in the foreground. Up to 1805, the Anglican congregation had assembled for Divine

Worship in the Parliament Building; and prior to the appointment of the Rev. Mr. Stuart, a layman, Mr. Cooper, afterwards the well-known wharfinger, used to read the service. In 1805, steps were taken to erect the building above described; and we are informed that the Commandant of the Garrison, Col. Sheaffe, ordered his men to assist in raising the frame. In 1810, a portion of the church-plot was enclosed, at an expense of £1 5*s.* for rails, of which five hundred were required for the purpose At the same time the ground in front of the west end, where was the entrance, was cleared of stumps, at an expense of £3 15*s.* In that year the cost for heating the building, and charges connected with the Holy Communion, amounted to £1 7*s.* 6*d.*, Halifax currency.

In 1813, Dr. Strachan succeeded Dr. Stuart as incumbent of the church; and in 1818 he induced the congregation to effect some alterations in the structure. On its north and south sides additional space was enclosed, which brought the axis of the building and its roof into a north and south direction. An entrance was opened at the southern end, towards King Street, and over the gable in this direction was built a square tower bearing a circular bell-turret, surmounted by a small tin-covered spire. The whole edifice, as thus enlarged and improved, was painted of a light blue colour, with the exception of the frames round the windows and doors, and the casings at the angles, imitating blocks of stone, alternately long and short, which were all painted white. In the bell-turret was a bell of sufficient weight sensibly to jar the whole building at every one of its semi-revolutions. The original western door was not closed up. Its use, almost exclusively, was now, on Sundays and other occasions of Divine Worship, to admit the Troops, whose benches extended along by the wall on that side the whole length of the church.—The upper windows on all the four sides were now made circular-headed. On the east side there was a difference. The altar-window of the original building remained, only transformed into a kind of triplet, the central compartment rising above the other two, and made circular-headed. On the north and south of this east window were two tiers of lights, as on the western side.

In the interior, a central aisle, or open passage, led from the door to the northern end of the church, where, on the floor, was situated a pew of state for the Lieutenant-Governor: small square pillars at its four corners sustained a flat canopy over it, immediately under the ceiling of the gallery; and below this distinctive tester or covering, suspended against the wall, were the royal arms, emblazoned on a black tablet of board or canvas. Half-way up the central aisle, on the right side, was an open space, in which were planted the pulpit, reading-desk and clerk's pew, in the old orthodox fashion, rising by gradations one above the other, the whole overshadowed by a rather handsome sounding-board, sustained partially by a rod from the roof. Behind this structure was the altar, lighted copiously by the original east window. Two narrow side-aisles, running parallel with the central one, gave access to corresponding rows of pews, each having a numeral painted on its door. Two passages, for the same purpose, ran westward from the space in front of the pulpit. To the right and left of the Lieut.-Governor's seat, and filling up (with the exception of two square corner pews) the rest of the northern end of the church, were two oblong pews; the one on the west appropriated to the officers of the garrison; the other, on the east, to the members of the Legislature.

Round the north, west, and south sides of the interior, ran a gallery, divided, like the area below, into pews. This structure was sustained by a row of pillars of turned wood, and from it to the roof above rose another row of similar supports. The ceiling over the parts exterior to the gallery was divided into four shallow semi-circular vaults, which met at a central point. The pews everywhere were painted of a buff or yellowish hue, with the exception of the rims at the top, which were black. The pulpit and its appurtenances were white. The rims, just referred to, at the tops of the pews, throughout the whole church, exhibited, at regular intervals, small gimlet-holes: in these were inserted annually, at Christmas-tide, small sprigs of hemlock-spruce. The interior, when thus dressed, wore a cheerful, refreshing look, in keeping with the festival commemorated.

Within this interior used to assemble, periodically, the little world of York: occasionally, a goodly proportion of the little world of all Upper Canada.

To limit ourselves to our own recollections: here, with great regularity, every Sunday, was to be seen, passing to and from the place of honour assigned him, Sir Peregrine Maitland,—a tall, grave officer, always in military undress; his countenance ever wearing a mingled expres-

sion of sadness and benevolence, like that which one may observe on the face of the predecessor of Louis Philippe, Charles the Tenth, whose current portrait recalls, not badly, the whole head and figure of this early Governor of Upper Canada. In an outline representation which we accidentally possessed, of a panorama of the battle of Waterloo, on exhibition in London, the 1st Foot Guards were conspicuously to be seen led on by "Major-General Sir Peregrine Maitland." It was a matter of no small curiosity to the boyish mind, and something that helped to rouse an interest in history generally, to be assured that the living personage here, every week, before the eye, was the commander represented in the panorama; one who had actually passed through the tremendous excitement of the real scene. With persons of wider knowledge, Sir Peregrine was invested with further associations. Besides being the royal representative in these parts, he was the son-in-law of Charles Gordon Lennox, fourth Duke of Richmond, a name that stirred chivalrous feelings in early Canadians of both Provinces; for the Duke had come to Canada as Governor-in-Chief, with a grand reputation acquired as Lord Lieutenant of Ireland; and great benefits were expected, and probably would have been realized from his administration, had it been of long continuance. But he had been suddenly removed by an excruciating death. Whilst on a tour of inspection in the Upper Province, he had been fatally attacked with hydrophobia, occasioned by the bite of a pet fox. The injury had been received at Sorel: its terrible effects were fatally experienced at a place near the Ottawa, since named Richmond.—Some of the prestige of the deceased Duke continued to adhere to Sir Peregrine Maitland, for he had married the Duke's daughter, a graceful and elegant woman, who was always at his side, here and at Stamford Cottage across the Lake. She bore a name not unfamiliar in the domestic annals of George the Third, who once, it is said, was enamoured of a beautiful Lady Sarah Lennox, grandmother, as we suppose, or some other near relative, of the Lady Sarah here before us at York. Moreover, conversationalists whispered about (in confidence) something supposed to be unknown to the general public—that the match between Sir Peregrine and Lady Sarah had been effected in spite of the Duke. The report was that there had been an elopement; and it was naturally supposed that the party of the sterner sex had been the most active agent in the affair. To say the truth, however, in this instance, it was the lady who precipitated matters. The affair occurred at Paris, soon after the Waterloo campaign. The Duke's final determination against Sir Peregrine's proposals having been announced, the daughter suddenly withdrew from the father's roof, and fled to the lodgings of Sir Peregrine, who instantly retired to other quarters. The upshot of the whole thing, at once romantic and unromantic, included a marriage and a reconciliation; and eventually a Lieutenant-Governorship for the son-in-law under the Governorship-in-chief of the father, both despatched together to undertake the discharge of vice-regal functions in a distant colony. At the time of his marriage with Lady Sarah Lennox, Sir Peregrine had been for some ten years a widower. On his staff here at York was a son by his first wife, also named Peregrine, an ensign in the army.

After the death of the Duke of Richmond, Sir Peregrine became administrator, for a time, of the general government of British North America. The movements of the representative of the crown were attended with some state in those days.—Even a passage across from York to Stamford, or from Stamford to York, was announced by a royal salute at the garrison. Of a visit to Lower Canada in 1824, when, in addition to the usual suite, there were in the party several young Englishmen of distinction, tourists at that early period, on this continent, we have the following notice in the *Canadian Review* for December of that year. After mentioning the arrival at the Mansion House Hotel in Montreal, the *Review* proceeds: "In the morning His Excellency breakfasted with Sir Francis Burton, at the Government House, whom he afterwards accompanied to Quebec in the *Swiftsure* steamboat.—Sir Peregrine is accompanied," the *Review* reports, "by Lord Arthur Lennox, Mr. Maitland, Colonels Foster, Lightfoot, Coffin and Talbot; with the Hon. E. G. Stanley [the present Lord Stanley], grandson of Earl Derby, M.P. for Stockbridge, John E. Denison, Esq. [subsequently Speaker of the House of Commons], M.P. for Newcastle-upon-Tyne, and James S. Wortley, Esq. [afterwards Lord Wharncliffe], M.P. for Bossiney in Cornwall. The three latter gentlemen," the magazine adds, "are now upon a tour in this country from England; and we are are happy to learn that they have expressed themselves as being highly gratified with all that they have hitherto seen in Canada."

It will be of interest to know that the name of Sir Peregrine Maitland is further pleasantly preserved by means of Maitland Scholarships in a Grammar School for natives at Madras,

and by a Maitland Prize in the University of Cambridge. The circumstances of the institution of these memorials are these, as originally announced: "The friends of Lieutenant-General Sir Peregrine Maitland, K.C.B., late Commander and Chief of the Forces in South India, being desirous of testifying their respect and esteem for his character and principles, and for his disinterested zeal in the cause of Christian Truth in the East, have raised a fund for the institution of a prize in one of the Universities, and for the establishment of two native scholarships at Bishop Corrie's Grammar School at Madras; such prize and scholarships to be associated with the name of Sir Peregrine Maitland. In pursuance of the foregoing scheme, the sum of £1,000 has been given to the University of Cambridge for the purpose of instituting a Prize to be called "Sir Peregrine Maitland's Prize," for an English essay on some subject connected with the propagation of the Gospel, through missionary exertions in India and other parts of the heathen world."—This Prize, which is kept up by the interest accruing every three years, has been awarded at Cambridge regularly since 1845.

The successor to Sir Peregrine Maitland in the Government of Upper Canada was another distinguished military officer, Sir John Colborne. With ourselves, the first impression of his form and figure is especially associated with the interior in which we are supposing the reader to be now standing. We remember his first passage up the central aisle of St. James's Church. He had arrived early, in an unostentatious way; and on coming within the building he quietly inquired of the first person whom he saw, sitting in a seat near the door, which was the Governor's pew? The gentleman addressed happened to be Mr. Bernard Turquand, who, quickly recognizing the inquirer, stood up and extended his right arm and open hand in the direction of the canopied pew over which was suspended the tablet bearing the Royal Arms. Sir John, and some of his family after him, then passed on to the place indicated.—At school, in an edition of Goldsmith then in use, the name of "Major Colborne" in connection with the account of Sir John Moore's death at Corunna had already been observed; and it was with us lads a matter of intense interest to learn that the new Governor was the same person. The scene which was epitomized in the school-book, is given at greater length in Gleig's Lives of Eminent British Military Commanders.—The following are some particulars from Colonel Anderson's narrative in that work: "I met the general," Colonel Anderson says, "on the evening of the 16th, bringing in, in a blanket and sashes. He knew me immediately, though it was almost dark, squeezed me by the hand and said 'Anderson, don't leave me.' At intervals he added 'Anderson, you know that I have always wished to die in this way. I hope the people of England will be satisfied. I hope my country will do me justice. You will see my friends as soon as you can. Tell them everything. I have made my will, and have remembered my servants. Colborne has my will and all my papers.' Major Colborne now came into the room. He spoke most kindly to him; and then said to me, 'Anderson, remember you go to ———, and tell him it is my request, and that I expect, he will give Major Colborne a lieutenant-colonelcy.' He thanked the surgeons for their trouble. He pressed my hand close to his body, and in a few minutes died without a struggle." He had been struck by a cannon-ball. The shot, we are told, had smashed his shoulder to atoms; the arm was hanging by a piece of skin, and the ribs over the heart, besides been broken, were literally stripped of flesh. Yet, the narrative adds, "he sat upon the field collected and unrepining, as if no ball had struck him, and as if he were placed where he was for the mere purpose of reposing for a brief space from the fatigue of hard riding." Sir John Colborne himself afterwards at Cuidad Rodrigo came within a hairs-breadth of a similar fate. His right shoulder was shattered by a cannon-shot. The escape of the right arm from amputation on the field at the hands of some prompt military surgeon on that occasion, was a marvel. The limb was saved, though greatly disabled. The want of symmetry in his tall and graceful form, permanently occasioned by this injury, was conspicuous to the eye. We happened to be present in the Council Chamber at Quebec, in 1838, at the moment when this noble-looking soldier literally vacated the vice-regal chair, and installed his successor Lord Durham in it, after administering to him the oaths. The exchange was not for the better, in a picturesque and scenic point of view; although Lord Durham, as his well-known portrait shews, was a personage of fine poetic or artist-like features.

Of late years a monument has been erected on Mount Wise at Plymouth, in honour of the illustrious military chief and preeminently excellent man, whose memory has just been recalled to us. It is a statue of bronze, by Adams, a little larger than life; and the likeness

s admirably preserved. (When seen on horseback at parades or reviews soldiers always averred that he greatly resembled "the Duke." Dr. Henry, in "Trifles from my Portfolio" (ii. 111.) thus wrote of him in 1833: "When we first dined at Government House, we were struck by the strong resemblance he bore to the Duke of Wellington; and there is also," Dr. Henry continues, "a great similarity in mind and disposition, as well as in the lineaments of the face. In one particular they harmonize perfectly—namely, great simplicity of character, and an utter dislike to shew any ostentation.") On the four sides of its granite pedestal are to be read the following inscriptions: in front: JOHN COLBORNE, BARON SEATON. BORN MDCCLXXVIII. DIED MDCCCLXIII. On the right side: CANADA. IONIAN ISLANDS. On the left side: PENINSULA. WATERLOO. On the remaining side: IN MEMORY OF THE DISTINGUISHED CAREER AND STAINLESS CHARACTER OF FIELD MARSHAL LORD SEATON, G.C.B., G.C.M.G., G.C.H. THIS MONUMENT IS ERECTED BY HIS FRIENDS AND COMRADES.—Accompanying the family of Sir John Colborne to their place in the Church at York was to be seen every Sunday, for sometime, a shy-mannered, black-eyed, Italian-featured Mr. Jeune, tutor to the Governor's sons. This was afterwards the eminent Dr. Jeune, Master of Pembroke College at Oxford, a great promoter of reform in that University, and Bishop of Lincoln. Sir John himself was a man of scholarly tastes; a great student of history, and a practical modern European linguist.—Through a casual circumstance, it is said that full praise was not publicly given, at the time, to the regiment commanded by Sir John Colborne, the 52nd, for the peculiar service rendered by it at the battle of Waterloo. By the independent direction of their leader, the 52nd made a sudden flank movement at the crisis of the fight and initiated the final discomfiture of which the Guards get the sole praise. At the close of the day, when the Duke of Wellington was rapidly constructing his despatch, Colonel Colborne was inquired for by him, and could not, for the moment, be found. The information, evidently desired, was thus not to be had; and the document was completed and sent off without a special mention of the 52nd's deed of "derring-do."—During the life-time of the great Duke there was much reticence among the military authorities in regard to the Battle of Waterloo, from the fact that the Duke himself did not encourage discussion on the subject. All was well that had ended well, appeared to have been his doctrine. He once checked an incipient dispute in regard to the great event of the 18th of June between two friends, in his presence by the command, half-jocose, half-earnest: "You leave the Battle of Waterloo alone!" He gave £60 for a private letter written by himself to a friend on the eve of the battle, and was heard to say, as he threw the document into the fire, "What a fool I was, when I wrote that!" Since the death of the Duke, an officer of the 52nd, subsequently in Holy Orders, has devoted a volume to the history of "the 52nd, or Lord Seaton's Regiment;" in which its movements on the field of Waterloo are fully detailed. And Colonel Chesney in his "Waterloo Lectures; a Study of the Campaign of 1815" has set the great battle in a new light, and has demolished several English and French traditions in relation to it, bringing out into great prominence the services rendered by Blucher and the Prussians. The Duke's personal sensitiveness to criticism was shewn on another occasion: when Colonel Gurwood suddenly died, he, through the police, took possession of the Colonel's papers, and especially of a Manuscript of Table Talk and other *ana*, designed for publication, and which, had it not been on the instant ruthlessly destroyed, would have been as interesting probably as Boswell's.—On Lord Seaton's departure from Canada, he was successively Lord High Commissioner of the Ionian Islands, and Commander-in-Chief in Ireland. He then retired to his own estate in the west of England, where he had a beautiful seat, in the midst of the calm, rural, inland scenery of Devonshire, not far from Plympton, and on the slope descending southward from the summits of Dartmoor. The name of the house is Beechwood, from the numerous clean, bold, magnificent beech trees that adorn its grounds, and give character to the neighbourhood generally. In the adjoining village of Sparkwell he erected a handsome school-house and church: and here his remains were deposited on his decease at Torquay in 1863. Mrs. Jameson's words in her "Winter Studies and Summer Rambles," express briefly but truly, the report which all that remember him, would give, of this distinguished and ever-memorable Governor of Canada. "Sir John Colborne," she says incidentally, in the Introduction to the work just named, "whose mind appeared to me cast in the antique mould of chivalrous honour; and whom I never heard mentioned in either Province but with respect and veneration." Dr. Henry in "Trifles from my Portfolio," once before referred to, uses

similar language. "I believe" he says "there never was a soldier of more perfect moral character than Sir John Colborne—a Bayard without gasconade, as well as *sans peur et sans reproche*."—The title "Seaton," we may add, was taken from the name of an ancient seaport town of Devon, the Moridunum of the Roman period.

IX.—KING STREET: ST. JAMES'S CHURCH—(*Continued.*)

At the southern end of the Church, in which we are supposing ourselves to be, opposite the Lieutenant-Governor's pew, but aloft in the gallery, immediately over the central entrance underneath, was the pew of Chief Justice Powell, a long narrow enclosure, with a high screen at its back to keep off the draughts from the door into the gallery, just behind. The whole of the inside of the pew, together with the screen by which it was backed, was lined with dark green baize or cloth. The Chief's own particular place in the pew was its central point. There, as in a focus, surrounded by the members of his family, he calmly sat, with his face to the north, his white head and intelligent features well brought out by the dark back-ground of the screen behind. The spectator, on looking up and recognizing the presence of the Chief Justice thus seated, involuntarily imagined himself, for the moment, to be in court. In truth, in an absent moment, the Judge himself might experience some confusion as to his whereabouts. For below him, on his right and left, he would see many of the barristers, attorneys, jurors and witnesses (to go no further), that on week-days were to be seen or heard before him in different compartments of the Court-room. Chief Justice Powell was of Welsh descent. The name is, of course, ap Hoel; of which "Caer Hoel," "Hoel's Place," the title given by the Chief Justice to his Park-lot at York, is a relic. An excellent portrait of him exists. He was a man of rather less than the ordinary stature. His features were round in outline, unmarked by the painful lines which usually furrow the modern judicial visage, but wakefully intelligent. His hair was milky white. The head was inclined to be bald. We have before us a contemporary brochure of the Chief's, from which we learn his view of the ecclesiastical land question, which for so long a period agitated Canada. After a full historical discussion, he recommends the re-investment of the property in the Crown, "which," he says, "in its bounty, will apply the proceeds equally for the support of Christianity, without other distinction:" but he comes to this determination reluctantly, and considers the plan to be one of expediency only. We give the concluding paragraph of his pamphlet, for the sake of its ring, so to speak—which is so thoroughly that of a by-gone day and generation: "If the wise provision of Mr. Pitt," the writer says, "to preserve the Law of the Union [between England and Scotland], by preserving the Church of England predominant in the Colony, and touching upon her rights to tythes only for her own advantage, and by the same course as the Church itself desiderates in England (the exchange of tythes for the fee simple), must be abandoned to the sudden thought of a youthful speculator [*i. e.*, Mr. Wilmot, Secretary for the Colonies, who had introduced a bill into the Imperial Parliament for the sale of the Lands to the Canada Company], let the provision of his bill cease, and the tythes to which the Church of England was at that time lawfully entitled be restored; she will enjoy these exclusively even of the Kirk of Scotland: but if all veneration for the wisdom of our Ancestors has ceased, and the time is come to prostrate the Church of England, bind her not up in the same wythe with her bitterest enemy; force her not to an exclusive association with any one of her rivals; leave the tythes abolished; abolish all the legal exchange for them; and restore the Reserves to the Crown, which, in its bounty, will apply the proceeds equally for the support of Christianity, without other distinction."

In the body of the Church, below, sat another Chief Justice, retired from public life, and infirm—Mr. Scott—the immediate predecessor of Chief Justice Powell; a white-haired, venerable form, assisted to his place, a little to the south of the Governor's pew, every Sunday. We have already once before referred to Mr. Scott.—And again: another judicial personage was here every week long to be seen, also crowned with the snowy honours of advanced age—Mr. Justice Campbell—afterwards, in succession to Chief Justice Powell, Chief Justice Sir William Campbell. *His* place was on the west side of the central aisle. Sir William Campbell was born so far back as 1758. He came out from Scotland as a soldier in a Highland regiment, and was taken prisoner at Yorktown when that place was surrendered by Cornwallis in 1781. In 1783 he settled in Nova Scotia and studied law. After practising as a barrister for nineteen years,

he was appointed Attorney-General for the Island of Cape Breton, from which post, after twelve years, he was promoted to a Judgeship in Upper Canada. This was in 1811. Thirteen years afterwards (in 1825) he became Chief Justice. The funeral of Sir William Campbell, in 1834, was one of unusual impressiveness. The Legislature was in session at the time, and attended in a body, with the Bar and the Judges. At the same hour, within the walls of the same Church, St. James's, the obsequies of a member of the Lower House took place, namely, of Mr. Roswell Mount, representative of the County of Middlesex, who had chanced to die at York during the session. A funeral oration on the two-fold occasion was pronounced by Archdeacon Strachan.—Dr. Henry, author of "Trifles from my Portfolio," attended Sir William Campbell, in his last illness. In the work just named, his case is thus described: "My worthy patient became very weak towards the end of the year," the doctor says, "his nights were restless—his appetite began to fail, and he could only relish tit bits. Medicine was tried fruitlessly, so his Doctor prescribed snipes. At the point of the sandy peninsula opposite the barracks," Dr. Henry continues, "are a number of little pools and marshes, frequented by these delectable little birds; and here I used to cross over in my skiff and pick up the Chief Justice's panacea. On this delicate food the poor old gentleman was supported for a couple of months: but the frost set in—the snipes flew away, and Sir William died." (ii. 112.) Appended to the account of the imposing ceremonies, in the York *Courier* of the day, we notice one of those familiar paragraphs which sensational itemists like to construct and which stimulate the self-complacency of small communities. It is headed LONGEVITY, and then thus proceeds: "At the funeral of the late Sir W. Campbell, on Monday, there were twenty inhabitants of York, whose united ages exceed fourteen hundred and fifty years!"

It is certain that there were to be seen moving up the aisles of the old wooden St. James's, at York, every Sunday, a striking number of venerable and dignified forms. For one thing, their costume helped to render them picturesque and interesting. The person of our immediate ancestors was well set off by their dress. Recall their easy, partially cut-away black coats and upright collars; their so-called small-clothes and buckled shoes; the frilled shirt-bosoms and white cravats, not apologies for cravats, but real envelopes for the neck. The comfortable well-to-do Quaker of the old school still exhibits in use some of their homely peculiarities of garb. And then remember the cut and arrangement of their hair, generally milky white, either from age or by the aid of powder; their smoothly shaven cheek and chin; and the peculiar expression superinduced in the eye and the whole countenance, by the governing ideas of the period, ideas that we are wont to style old-fashioned, but which furnished, nevertheless, for the time being, very useful and definite rules of conduct. Two pictures, one, Trumbull's Signing of the Declaration of Independence; the other, Huntingdon's Republican Court of Washington (shewn in Paris in 1867), exhibit to the eye the outward and visible presentment of the prominent actors in the affairs of the central portion of this Northern Continent, a century ago. These paintings do the same, in some degree, for us here in the north, also; any one of the more conspicuous figures in the congregation of the old St. James's, at York, might have stepped out from the canvas of one or other of the delineations just named. On occasions of state, even the silken bag (in the case of officials at least) was attached to the nape of the neck, as though, in accordance with a fashion of an earlier day still, the hair were yet worn long, and required gathering up in a receptacle provided for the purpose.—It seems now almost like a dream that we have seen in the flesh the honoured patriarchs and founders of our now great community thus assembled together in antique guise—

> "Zarah, Nahor, Haran, Abram, Lot,
> The youthful world's gray fathers in one knot"—

that our eyes have really beheld the traces left upon their countenances by their long and varied experiences, by their cares, and processes of thought; the traces left on them by the lapse of years, by rough and troublous times, not merely heard of by the hearing of the ear, as existing across the Lakes or across the Seas, but as encountered in their own persons, in their own land, at their own hearths; encountered and bravely struggled through: that we have been eye-witnesses of their cheeriness and good heart after crisis upon crisis had come upon them; eye-witnesses of their devotedness to duty, the duty that presented itself, as each successive emergency arose: accomplishing their work honestly and well according to their knowledge and beliefs, without realizing in many an instance probably, the reach and vastness of the great

scheme of civilization which was been wrought out through them, and yet independently of them: that with our own eyes we have seen them, again and again, engaged within consecrated walls, in solemn acts which expressed, in spite of the vicissitudes which their destiny had brought with it, their unaffected faith in the unseen, and their living hope in relation to futurity. All this, we say, now seems like a dream of the night, or a mystic revelation of the scenes of a very distant period and in a very distant locality, rather than the recollections of a few short years and of the spot on which we stand. The names, however, which we shall give will have a sound of reality about them: they will be recognized as familiar, household words still perpetuated, or, at all events, still freshly remembered, amongst us.

From amongst the venerable heads and ancestral forms which recur to us, as we gaze down in imagination from the galleries of the old wooden St. James's of York, we will single out, in addition to those already spoken of, that of Mr. Ridout, sometime Surveyor-General of the Province, father of a numerous progeny, and tribal head, so to speak, of more than one family of connections settled here, bearing the same name. He was a fine typical representative of the group to which our attention is directed. He was a perfect picture of a cheerful, benevolent-minded Englishman; of portly form, well advanced in years, his hair snowy-white naturally; his usual costume, of the antique style already described.—Then there was Mr. Small, Clerk of the Crown, an Englishman of similar stamp. We might sketch the rest separately as they rise before the mind's eye; but we should probably, after all, convey an idea of each that would be too incomplete to be interesting or of much value. We therefore simply name other members of the remarkable group of reverend seniors that assembled habitually in the church at York. Mr. Justice Boulton, Colonel Smith, sometime President of the Province; Mr. Allan, Mr. M'Gill, Mr. Crookshank, Major Heward, Colonel Wells, Colonel Fitzgibbon, Mr. Dunn, Dr. Macaulay, Dr. Baldwin, Dr. Lee, Mr. Samuel Ridout, Mr. Chewett, Mr. McNab (Sir Allan's father); Mr. Stephen Jarvis, who retained to the last the ancient fashion of tying the hair in a queue. We might go on with several others, also founders of families that still largely people York and its vicinity; we might mention old Captain Playter, Captain Denison, Mr. Scarlett, Captain Brooke and others. Filial duty would urge us not to omit, in the enumeration, one who, though at a very early period removed by a sudden casualty, is vividly remembered, not only as a good and watchful father, but also as a venerable form harmonizing perfectly in expression and costume with the rest of the group which used to gather in the church at York.—Of course, mingled with the ancients of the congregation, there was a due proportion of a younger generation. There was for example Mr. Simon Washburn, a bulky and prosperous barrister, afterwards Clerk of the Peace, who was the first, perhaps, in these parts, to carry a glass adroitly in the eye. There was Dr. Grant Powell, a handsome reproduction, on a larger scale, of his father the Chief, as his portrait shews; there were the Messrs. Monro, George and John; the Messrs. Stanton; the Messrs. Gamble, John and William; Mr. J. S. Baldwin, Mr. Lyons, Mr. Beikie, and others, all men of note, distinguishable from each other by individual traits and characteristics that might readily be sketched.—And lastly in the interstices of the assemblage was to be seen a plentiful representation of generation number three; young men and lads of good looks, for the most part, well set-up limbs, and quick faculties; in some instances, of course, of fractious temperament and manners. As ecclesiastical associations are at the moment uppermost, we note an ill habit that prevailed among some of these younglings of the flock, of loitering long about the doors of the church for the purpose of watching the arrivals, and then, when the service was well advanced, the striplings would be seen sporadically coming in, each one imagining, as he passed his fingers through his hair and marched with a shew of manly spirit up the aisle, that he attracted a degree of attention; attracted, perhaps, a glance of admiration from some of the many pairs of eyes that rained influence form a large pew in the eastern portion of the north gallery, where the numerous school of Miss Purcell and Miss Rose held a commanding position.

It would have been a singular exception to a general law, had the interior into which we are now gazing, and whose habitués we are now recalling, not been largely frequented by the feminine portion of society at York. In their place seated, in various directions along the galleries and in the body of the old wooden church, were to be regularly seen fine specimens of the venerable great grandmamma of the old English and Scottish type (in one or two instances to be thought of to this day with a degree of awe by reason of the vigour, almost masculine, of their

character); specimens of kindly maiden aunts; specimens of matronly wives and mothers, keeping watch and ward over bevies of comely daughters and nieces.

Lady Sarah Maitland herself cannot be called a fixed member of society here, but having been for so long a time a resident, it seems now, in the retrospect, as if she had been really a development of the place. Her distinguished style, native to herself, had its effect on her contemporaries of the gentler sex in these parts. Mrs. Dunn, also, and Mrs. Wells, may likewise be named as special models of grace and elegance in person and manner. In this all-influential portion of the community, a tone and air that were good prevailed widely from the earliest period. It soon became a practice with the military, and other temporary sojourners attached to the Government, to select partners for life from the families of York. Hence it has happened that, to this day, in England, Ireland and Scotland, and in the Dependencies of the Empire on the other side of the globe, many are the households that rise up and call a daughter of Canada blessed as their maternal head.—Local aspirants to the holy estate were thus unhappily, now and then, to their great disgust, baulked of their first choice. But a residue was always left, sufficient for the supply of ordinary wants; and manifold were the interlacings of local connection, in which fact there is nothing surprising and nothing to be condemned: it was from political considerations alone that such affinities came afterwards to be referred to, in some quarters, with bitterness.—Occasionally, indeed, a fastidious young man, or a disappointed widower, would make a selection in parts remote from the home circle, quite unnecessarily. We recall especially to mind the sensible emotion in the congregation on the first advent amongst them of a fair bride from Montreal, the then Paris of Canada; and several lesser excitements of the same class, on the appearance in their midst of aerial veils and orange blossoms from Lobo, from New York, from distant England. Once the selection of a "helpmeet" from a rival religious communion, in the town of York itself, led to the defection from the flock of a prominent member; an occurrence that led also to the publication of two polemical pamphlets, which made a momentary stir; one of them a declamation by a French bishop; the other, a review of the same, by the pastor of the abandoned flock.—The strictures on the intelligence and moral feeling of the feminine, as well as the masculine portion of society at York, delivered by such world-experienced writers as Mrs. Jameson, and such enlightened critics as were two or three of the later Governors' wives, may have been just, in the abstract, to a certain extent, as from the point of view of old communities in England and Germany; but they were unfair as from the point of view of persons calmly reviewing all the circumstances of the case. Here again the maxim applies: *Tout comprendre, c'est tout pardonner.*

We have said that the long pew on the west side of the Governor's seat was allotted to the military. In this compartment we remember often scanning with interest the countenance and form of a youthful and delicate-looking ensign, simply because he bore, hereditarily, a name and title all complete, distinguished in the annals of science two centuries ago—the Hon. Robert Boyle: he was one of the aides-de-camp of Sir Peregrine Maitland. Here also was to be seen, for a time, a Major Browne, a brother of the formerly popular poetess, Mrs. Hemans. Here, too, sat a Zachary Mudge, another hereditary name complete, distinguished in the scientific annals of Devonshire. He was an officer of Artillery, and one of Sir John Colborne's aides-de-camp; for some unexplained reason he committed suicide at York, and his remains were deposited in the old military burying-ground. In this pew familiar forms were also—Major Powell, Capt. Grubbe, Major Hillier, Capt. Blois, Capt. Phillpotts, brother of the Bishop.

The compartment on the east side of the Governor's pew was, as we have said, appointed for the use of the members of the Legislature when in session. Here at certain periods, generally in mid-winter, were to be observed all the political notabilities of the day; for at the period we are glancing at, non-conformists as well as conformists were to be seen assisting, now and again, at public worship here. The outward presentments of Col. Nichol (killed by driving over the precipice at Queenston), of Mr. Horner (a Benjamin Franklin style of countenance), of Dr. Lefferty, of Hamnet Pinhey, of Mahlon Burwell, of Absalom Shade, of other owners of old Canadian names, are well remembered. The spare, slender figure of Mr. Speaker Sherwood, afterwards a Judge of the King's Bench, was here to be seen. Mr. Chisholm, of Oakville, used facetiously to object to the clause in the Litany where "heresy and schism" are deprecated, it so happening that the last term was usually, by a Scotticism, read "Chisholm." Up to the Parliamentary pew we have seen Mr. William Lyon McKenzie himself hurriedly make his way

with an air of great animation, and take his seat, to the visible, but, of course, repressed disconcertment of several honourable members, and others.

Altogether, it was a very complete little world, this assemblage within the walls of the old wooden church at York. There were present, so to speak, king, lords and commons; gentle and simple in due proportion, with their wives and little ones; judges, magistrates and gentry; representatives of governmental departments, with their employés; legislators, merchants, tradespeople, handicraftsmen; soldiers and sailors; a great variety of class and character. All seemed to be in harmony, real or conventional, here; whatever feuds, family or political, actually subsisted, no very marked symptoms thereof could be discerned in this place. But the history of all was known, or supposed to be known, to each. The relationship of each to each was known, and how it was brought about. It was known to all how every little scar, every trivial mutilation or disfigurement, that chanced to be visible on the visage or limb of any one, was acquired, in the performance of what boyish freak, in the execution of what practical jest, in the excitement of what convivial or other occasion. Here and there sat one who, in obedience to the social code of the day, had been "out," for the satisfaction, as the term was, of himself or another, perhaps a quondam friend—satisfaction obtained (let the age be responsible for the terms we use), in more than one instance, at the cost of human life.

X.—KING STREET: ST. JAMES'S CHURCH—(*Continued.*)

It is beginning, perhaps, to be thought preposterous that we have not as yet said anything of the occupants of the pulpit and desk, in our account of this church interior. We are just about to supply this deficiency.

Here was to be seen and heard, at his periodical visits, Charles James Stewart, the second Bishop of Quebec, a man of saintly character and presence; long a missionary in the Eastern Townships of Lower Canada, before his appointment to the Episcopate. The contour of his head and countenance, as well as something of his manner even, may be gathered from a remark of the late Dr. Primrose, of Toronto, who, while a stranger, had happened to drop in at the old wooden church when Bishop Stewart was preaching: "I just thought," the doctor said, "it was the old King in the pulpit!" *i. e.*, George III.

Here Dr. Okill Stewart, formerly rector of this church, but subsequently of St. George's, Kingston, used occasionally, when visiting York, to officiate—a very tall, benevolent, and fine-featured ecclesiastic, with a curious delivery, characterized by unexpected elevations and depressions of the voice irrespective of the matter, accompanied by long closings of the eyes, and then a sudden re-opening of the same. Whenever this preacher ascended the pulpit, one member of the congregation, Mr. George Duggan, who had had, it was understood, some trivial disagreement with the doctor during his incumbency in former years, was always expected, by on-lookers, to rise and walk out. And this he accordingly always did. The movement seemed a regular part of the programme of the day, and never occasioned any particular remark.

Here Mr. Joseph Hudson officiated now and then, a military chaplain, appointed at a comparatively late period to this post; a clergyman greatly beloved by the people of the town generally, both as a preacher and as a man. He was the first officiating minister that we ever saw wearing the academical hood over the ordinary vestment.

Here during the sittings of Parliament, of which he was chaplain, Mr. Addison, of Niagara, was sometimes to be heard. The Library of this scholarly divine of the old school was presented by him *en bloc* to St. Mark's Church, Niagara, of which he was incumbent. It remained for some years at "Lake View," the private residence of Mr. Addison; but during the incumbency of Dr. McMurray, it has been removed to the rectory-house at Niagara, where it is to continue, in accordance with the first rector's will, for the use of the incumbent for the time being. It is a remarkable collection, as exhibiting the line of reading of a thoughtful and intelligent man of the last century: many treatises and tracts of contemporary, but now defunct interest, not elsewhere to be met with, probably, in Canada, are therein preserved. The volumes, for the most part, retain their serviceable bindings of old pane-sided calf; but some of them, unfortunately, bear marks of the havoc made by damp and vermin before their transfer to their present secure place of shelter.—Mr. Addison used to walk to and from Church in his

canonicals in the old-fashioned way, recalling the Johnsonian period, when clergy very generally wore their cassocks and gowns in the streets.

Another chaplain to the Legislative Assembly was Mr. William Macaulay, a preacher always listened to with a peculiar attention, whenever he was to be heard in the pulpit here. Mr. Macaulay was a member of the Macaulay-family settled at Kingston. He had been sent to Oxford, where he pursued his studies without troubling himself about a degree. While there he acquired the friendship of several men afterwards famous, especially of Whately, sometime Archbishop of Dublin, with whom a correspondence was maintained. Mr. Macaulay's striking and always deeply-thoughtful matter was set off to advantage by the fine intellectual contour of his face and head, which were not unlike those to be seen in the portrait of Maltby, Bishop of Durham, usually prefixed to Morell's Thesaurus.

One more chaplain of the House may be named, frequently heard and seen in this Church—Dr. Thomas Phillips—another divine, well-read, of a type that has now disappeared. His personal appearance was very clerical in the old-fashioned sense. His countenance was of the class represented by that of the late Sir Henry Ellis, as finely figured in a recent number of the *Illustrated News*. He was one of the last wearers of hair-powder in these parts. In reading the Creed he always endeavoured to conform to the old English custom of turning towards the east; but to do this in the desk of the old church was difficult. Dr. Phillips was formerly of Whitchurch, in Herefordshire. He died in 1849, aged 68, at Weston, on the Humber, where he founded and organized the parish of St. Philip. His body was borne to its last resting-place by old pupils.—We once had in our possession a pamphlet entitled "The Canadian Remembrancer, a Loyal Sermon, preached on St. George's Day, April 23, 1826, at the Episcopal Church [York], by the Rev. T. Phillips, D.D., Head Master of the Grammar School. Printed at the *Gazette* Office."

There remains to be noticed the "pastor and master" of the whole assemblage customably gathered together in St. James's Church—Dr. John Strachan. On this spot, in successive edifices, each following the other in rapid succession, and each surpassing the other in dignity and propriety of architectural style, he, for more than half a century, was the principal figure. The story of his career is well-known, from his departure from Scotland, a poor but spirited youth, in 1799, to his decease in 1867, as first Bishop of Toronto, with its several intermediate stages of activity and promotion. His outward aspect and form are also familiar, from the numerous portraits of him that are everywhere to be seen. In stature slightly under the medium height, with countenance and head of the type of Milton's in middle age, without eloquence, without any extraordinary degree of originality of mind, he held together here a large congregation, consisting of heterogeneous elements, by the strength and moral force of his personal character. Qualities, innate to himself, decisiveness of intellect, firmness, a quick insight into things and men, with a certain fertility of resource, conspired to win for him the position which he filled, and enabled him to retain it with ease; to sustain, with a graceful and unassuming dignity, all the augmentations which naturally accumulated round it, as the community, of which he was so vital a part, grew and widened and rose to a higher and higher level, on the swelling tide of the general civilization of the continent. In all his public ministrations he was to be seen officiating without affectation in manner or style. A stickler in ritual would have declared him indifferent to minutiæ. He wore the white vesture of his office with an air of negligence, and his doctor's robe without any special attention to its artistic adjustment upon his person. A technical precisian in modern popular theology would pronounce him out now and then in his doctrine. What he seemed especially to drive at was, not so much, dogmatic accuracy as a well-regulated life, in childhood, youth and manhood. The good sense of the matter delivered—and it was never destitute of that quality—was solely relied on for the results to be produced: the topics of modern controversy never came up in his discourses: at the period to which we refer they were in most quarters dormant, their re-awakening deferred until the close of a thirty years' peace, but then destined to set mankind by the ears when now relieved from the turmoil of physical and material war, but roused to great intellectual activity. Many a man that dropped in during the time of public worship, inclined from prejudice to be captious, inclined even to be merry over certain national peculiarities of utterance and diction, which to a stranger, for a time, made the matter delivered not easy to be understood, went out with quite a different sentiment in regard to the preacher and his words.

In the early days of Canada, a man of capacity was called upon, as we have seen in other instances, to play many parts. It required tact to play them all satisfactorily. In the case of Dr. Strachan—the voice that to-day would be heard in the pulpit, offering counsel and advice as to the application of sacred principles to life and conduct, in the presence of all the civil functionaries of the country, from Sir Peregrine Maitland to Mr. Chief Constable Higgins; from Chief Justice Powell to the usher of his court, Mr. Thomas Phipps; from Mr. Speaker Sherwood or McLean to Peter Shaver, Peter Perry, and the other popular representatives of the Commons in Parliament;—the voice that to-day would be heard in the desk leading liturgically the devotions of the same mixed multitude—to-morrow was to be heard by portions, large or small, of the same audience, amidst very different surroundings, in other quarters: by some of them, for example, at the Executive Council Board, giving a lucid judgment on a point of governmental policy, or in the Chamber of the Legislative Assembly, delivering a studied oration on a matter touching the interests and well-being of the whole population of the country, or reading an elaborate original report on the same or some cognate question, to be put forth as the judgment of a committee: or elsewhere, the same voice might be heard at a meeting for Patriotic purposes; at the meeting of a Hospital, Educational, or other important secular Trust; at an emergency meeting, when sudden action was needed on the part of the charitable and benevolent:—without fail, that voice would be heard by a large portion of the juniors of the flock on the following day, amidst the busy commotion of School, apportioning tasks, correcting errors, deciding appeals, regulating discipline; at one time formally instructing, at another jocosely chaffing, the sons and nephews of nearly all the well-to-do people, gentle and simple, of York and Upper Canada. To have done all this without awkwardness shews the possession of much prudence and tact. To have had all this go on for some decades without any blame that was intended to be taken in very serious earnest; nay, winning in the process applause and gratitude on the right hand and on the left—this argues the existence of something very sterling in the man. Nor let us local moderns, whose lot it is to be part and parcel of a society no longer rudimentary, venture to condemn one who, while especially appointed to be a conspicuous minister of religion, did not decline the functions, diverse and multiform, which an infant society, discerning the qualities inherent in him, and lacking instruments for its uses, summoned him to undertake. Let no modern caviller, we say, do this, unless he is prepared to avow the opinion that, to be a minister of religion, a man must, of necessity, be only partially-developed in mind and spirit, incapable, as a matter of course, of offering an opinion of value on subjects of general human interest.

The long possession of unchallenged authority within the immediate area of his ecclesiastical labours, rendered Dr. Strachan for some time opposed to the projects that began, as the years rolled on, to be mooted, for additional Churches in the town of York. He could not readily be induced to think otherwise than as the Duke of Wellington thought in regard to Reform in the representation, or as ex-Chancellor Eldon thought in regard to greater promptitude in Chancery decisions, that there was no positive need of change. "Would you break up the congregation?" was the sharp rejoinder to the early propounders of schemes for Church-extension in York. But as years passed over, and the imperious pressure of events and circumstances was felt, this reluctance gave way. The beautiful Cathedral mother-church, into which, under his own eye, and through his own individual energy, the humble wooden edifice of 1803 at length, by various gradations, developed, forms now a fitting mausoleum for his mortal remains—a stately monument to one who was here in his day the human main-spring of so many vitally-important and far-reaching movements.

Other memorials in his honour have been projected and thought of, but none have, as yet, assumed tangible shape. One of them we record for its boldness and originality and fitness, although we have no expectation that the æsthetic feeling of the community will soon lead to the practical adoption of the idea thrown out. The suggestion has been this: that in honour of the deceased Bishop, there should be erected, in some public place in Toronto, an exact copy of Michael Angelo's Moses, to be executed at Rome for the purpose, and shipped hither. The conception of such a form of monument is due to the Rev. W. Macaulay, of Picton. We need not say what dignity would be given to Toronto by the possession of such a memorial-object within its precincts as this, and how great, in all future time, would be the effect, morally and educationally, when the symbolism of that object of art was discovered and understood. Its

huge bulk, its boldly-chiselled and only partially-finished limbs and drapery, raised aloft on a plain pedestal of some Laurentian rock, would represent, not ill, the man whom it would commemorate—the character, roughly-outlined and incomplete in parts, but, when taken as a whole, very impressive and even grand, which looms up before us, whichever way we look, in our local Past.—One of the things that ennoble the old cities of continental Europe and give them their own peculiar charm, is the existence of such objects in their streets and squares, at once works of art for the general eye, and memorials of departed worth and greatness. With what interest, for example, does the visitor gaze on the statue of Gutenberg, at Mayence; and at Marseilles on that of the good Bishop Belsunce!—of whom we read, that he was at once "the founder of a college, and a magistrate, almoner, physician and priest to his people."—The space in front of the contemplated west porch of the cathedral of St. James would be an appropriate site for such a noble memorial-object as that which Mr. Macaulay suggests—just at the spot where was the entrance, the one sole humble portal, of the structure of wood out of which the existing pile has grown.

Our notice of the assemblage usually to be seen within the walls of the primitive St. James's, would not be complete, were we to omit all mention of Mr. John Fenton, who for some time officiated therein as parish clerk. During the palmy days of parish clerks in the British Islands, such functionaries, deemed at the time, locally, as indispensable as the parish minister himself, were a very peculiar class of men. He was a rarity amongst them, who could repeat in a rational tone and manner the responses delegated to him by the congregation. This arose from the circumstance that he was usually an all but illiterate village rustic, or narrow-minded small-townsman, brought into a prominence felt on all sides to be awkward. Mr. Fenton's peculiarities, on the contrary, arose from his intelligence, his acquirements, and his great self-confidence. He was a rather small shrewd-featured person, at a glance not deficient in self-esteem. He was a proficient in modern popular science, a ready talker and lecturer. Being only a proxy, his rendering of the official responses in church was marked perhaps by a little too much individuality, but it could not be said that it was destitute of a certain rhetorical propriety of emphasis and intonation. Though not gifted, in his own person, with much melody of voice, his acquisitions included some knowledge of music. In those days congregational psalmody was at a low ebb, and the small choirs that offered themselves fluctuated, and now and then vanished wholly. Not unfrequently, Mr. Fenton, after giving out the portion of Brady and Tate, which it pleased him to select, would execute the whole of it as a solo, to some accustomed air, with graceful variations of his own. All this would be done with great coolness and apparent self-satisfaction. While the Discourse was going on in the Pulpit above him, it was his way, often, to lean himself resignedly back in a corner of his pew and throw a white cambric handkerchief over his head and face. It illustrates the spirit of the day to add, that Mr. Fenton's employment as official mouth-piece to the congregation of the English Church, did not stand in the way of his making himself useful, at the same time, as a class-leader among the Wesleyan Methodists. The temperament and general style of this gentleman did not fail of course to produce irritation of mind in some quarters. The *Colonial Advocate* one morning averred its belief that Mr. Fenton had, on the preceding Sunday, glanced at itself and its patrons in giving out and singing (probably as a solo) the Twelfth Psalm: "Help, Lord, for good and godly men do perish and decay; and faith and truth from worldly men is parted clean away; whoso doth with his neighbour talk, his talk is all but vain; for every man bethinketh now to flatter, lie and feign!"—Mr. F. afterwards removed to the United States, where he obtained Holy Orders in the Episcopal Church. His son was a clever and ingenious youth. We remember a capital model in wood of "Cæsar's Bridge over the Rhine," constructed by him from a copper-plate engraving in an old edition of the Commentaries used by him in the Grammar School at York. The predecessor of Mr. Fenton in the clerk's desk was Mr. Hetherington—a functionary of the old-country village stamp. His habit was, after giving out a psalm, to play the air on a bassoon; and then to accompany with fantasias on the same instrument such vocalists as felt inclined to take part in the singing. This was the day of small things in respect of ecclesiastical music at York. A choir from time to time had been formed. Once, we have understood, two rival choirs were heard on trial in the Church; one of them strong in instrumental resources, having the aid of a bass-viol, clarionet and bassoon the other, more dependant on its vocal excellencies. The instrumental choir triumphantly

prevailed, as we are assured: and in 1819 an allowance of £20 was made to Mr. Hetherington for giving instruction in church music. One of the principal encouragers of the vocalist-party was Dr. Burnside. But all expedients for doing what was, in reality, the work of the congregation itself were unreliable; and the clerk or choir-master too often found himself a solitary performer. Mr. Hetherington's bassoon, however, may be regarded as the harbinger and foreshadow of the magnificent organ presented in after-times to the congregation of the "Second Temple" of St. James, by Mr. Dunn—a costly and fine-toned instrument (presided over, for a short time, by the eminent Dr. Hodges, subsequently of Trinity Church, New York), and destined to be destroyed by fire together with the whole church, after only two years of existence, in 1839.—(In the conflagration of 1839 another loss occurred, not so much to be regretted; we refer to the destruction of a very large triplet window of stained glass over the altar of the church, containing three life-size figures by Mr. Craig, a local "historical and ornamental" painter, not well-skilled in the ecclesiastical style. As home-productions, however, these objects were tenderly eyed: but Mrs. Jameson in her work on Canada cruelly denounced them as being "in a vile, tawdry taste." Conceive the critical authoress of the "History of Sacred and Legendary Art" in the presence of these three "Craigs.")

Before leaving St. James's Church and its precincts, it may be well to give some account of the steps taken in 1818, for the enlargement of the original building. This we are enabled to do, having before us an all but contemporary narrative. It will be seen that great adroitness was employed in making the scheme acceptable, and that pains were shrewdly taken to prevent a burdensome sense of self-sacrifice on the part of the congregation. At the same time a pleasant instance of voluntary liberality is recorded. "A very respectable church was built at York of the Home District, many years ago"—the narrative referred to, in the *Christian Recorder* for 1819, p. 214, proceeds to state—"which at that time accommodated the inhabitants; but for some years past, it has been found too small, and several attempts were made to enlarge and repair it. At length, in April 1818, in a meeting of the whole congregation, it was resolved to enlarge the church, and a committee was appointed to suggest the most expeditious and economical method of doing it. The committee reported that a subscription in the way of loan, to be repaid when the seats were sold, was the most promising method. No subscription to be taken under twenty-five pounds, payable in four instalments. Two gentlemen," the narrative continues, "were selected to carry the subscription paper round; and in three hours from twelve to thirteen hundred pounds were subscribed. Almost all the respectable gentlemen gave in loan Fifty Pounds; and the Hon. Justice Boulton, and George Crookshank, Esq., contributed £100 each, to accomplish so good an object. The church was enlarged, a steeple erected, and the whole building with its galleries, handsomely finished. In January last [1819]" our authority proceeds to say, "when every thing was completed, the pews were sold at a year's credit, and brought more money than the repairs and enlargement cost. Therefore" it is triumphantly added, "the inhabitants at York erect a very handsome church at a very little expense to themselves, for every one may have his subscription money returned, or it may go towards payment of a pew; and, what is more, the persons who subscribed for the first church count the amount of their subscription as part of the price of their new pews. This fair arrangement has been eminently successful; and gave great satisfaction." The special instance of graceful voluntary liberality above referred to is then subjoined in these terms: "George Crookshank, Esq., notwithstanding the greatness of his subscription, and the pains which he took in getting the church well-finished, has presented the clergyman with cushions for the pulpit and reading desk, covered with the richest and finest damask; and likewise cloth for the communion-table. This pious liberality," the writer remarks, "cannot be too much commended; it tells us that the benevolent zeal of ancient times is not entirely done away. The congregation were so much pleased," it is further recorded, "that a vote of thanks was unanimously offered to Mr. Crookshank for his munificent present." (The pulpit, sounding-board, and desk had been a gift of Governor Gore to the original church, and had cost the sum of one hundred dollars.)

When the necessity arose in 1830 for replacing the church thus enlarged and improved, by an entirely new edifice of more respectable dimensions, the same cool, secular ingenuity was again displayed in the scheme proposed; and it was resolved by the congregation (among other things) "that the pew-holders of the present church, if they demanded the same, be credited one-

third of the price of the pews that they purchased in the new church, not exceeding in number those which they possessed in the old church: that no person be entitled to the privilege granted by the last resolution who shall not have paid up the whole purchase money of his pew in the old church; that the present church remain as it is, till the new one is finished; that after the new church is completed, the materials of the present one be sold to the highest bidder, and the proceeds of the same be applied to the liquidation of any debt that may be contracted in erecting the new church, or furnishing the same; that the upset price of pews in the new church be twenty-five pounds currency;" and so on.

The stone edifice then erected (measuring within about 100 by 75 feet), but never completed in so far as related to its tower, was destroyed by fire in 1839. Fire, in truth, may be said to be, sooner or later, the "natural death" of public buildings in our climate, where, for so many months in every year, the maintenance within them of a powerful artificial heat is indispensable. Ten years after the re-edification of the St. James's burnt in 1839, its fate was again to be totally destroyed. But now fire was communicated to it from an external source—from a general conflagration raging at the time in the part of the town lying to the eastward. On this occasion was destroyed in the belfry of the tower, a Public Clock, presented to the inhabitants of Toronto, by Mr. Draper, on his ceasing to be one of their representatives in Parliament.

XI.—KING STREET: DIGRESSION NORTHWARD AT CHURCH STREET: THE OLD DISTRICT GRAMMAR SCHOOL.

Immediately north of the church plot, and separated from it by an allowance for a street, was a large field, almost square, containing six acres. In a plan of the date 1819, and signed "T. Ridout, Surveyor-General," this piece of ground is entitled "College Square." (In the same plan the church reservation is marked "Church Square;" and the block to the west, "Square for Court House and Gaol." The fact that the Jail was to be erected there accounts for the name "Newgate Street," formerly borne by what is now Adelaide Street.) In the early days, when the destined future was but faintly realized, "College Square" was probably expected to become in time, and to continue for ever, an ornamental piece of ground round an educational institution. The situation, in the outskirts of York, would be deemed convenient and airy. For many years this six-acre field was the play-ground of the District Grammar School. Through the middle of it from north to south passed a shallow "swale," where water collected after rains; and where in winter small frozen ponds afforded not bad sliding-places. In this moist region, numerous crayfish were to be found in summer. Their whereabouts was always indicated by small clay chimneys of a circular form, built by the curious little nipping creatures themselves, over holes for the admission of air.—In different places in this large area were remains of huge pine-stumps, underneath the long roots of which, it was an amusement to dig and form cellars or imaginary treasure-vaults and powder-magazines. About these relics of the forest still grew remains of the ordinary vegetation of such situations in the woods; especially an abundance of the sorrel-plant, the taste of which will be remembered, as being quite relishable. In other places were wide depressions shewing where large trees had once stood. Here were no bad places, when the whim so was, to lie flat on the back and note the clouds in the blue vault over head; watch the swallows and house-martens when they came in spring; and listen to their quiet prattle with each other as they darted to and fro; sights and sounds still every year, at the proper season, to be seen and heard in the same neighbourhood, yielding to those who have an eye or ear for such matters a pleasure ever new; sights and sounds to this day annually resulting from the cheery movements and voices of the direct descendants, doubtless, of the identical specimens that flitted hither and thither over the play-ground of yore.—White clover, with other herbage that commonly appears spontaneously in clearings, carpeted the whole of the six acres, with the exception of the places worn bare, where favourable spots had been found for the different games of ball in vogue—amongst which, however, cricket was not then in these parts included. After falls of moist snow in winter, gigantic balls used here to be formed, gathering as they were rolled along, until by reason of their size and weight they could be urged forward no further: and snow-castles on a large scale were laboriously built; destined to be defended or captured with immense displays of gallantry. Preparatory to such contest, piles of ammunition would be stored away within these structures.

It was prohibited indeed in the articles to be observed in operations of attack and defence, to construct missiles of very wet snow; to dip a missile in melted snow-water prior to use; to subject a missile after a saturation of this kind, to the action of a night's frost; to secrete within the substance of a missile any foreign matter; yet, nevertheless, occasionally such acts were not refrained from; and wounds and bruises of an extra serious character, inflicted by hands that could not always be identified, caused loud and just complaints. Portions of the solid and extensive walls of the extemporized snow-fortresses were often conspicuous in the play-ground long after a thaw had removed the wintry look from the rest of the scene.

The Building into which the usual denizens of the six-acre play-ground were constrained, during certain portions of each day, to withdraw themselves, was situated at a point 114 feet from its western, and 104 from its southern boundary. It was a large frame structure, about fifty-five long, and forty wide; of two storeys; each of a respectable altitude. The gables faced east and west. On each side of the edifice were two rows of ordinary sash windows, five above, and five below. At the east end were four windows, two above, two below. At the west end were five windows and the entrance-door. The whole exterior of the building was painted of a bluish hue, with the exception of the window and door frames, which were white. Within, on the first floor, after the lobby, was a large square apartment. About three yards from each of its angles, a plain timber prop or post helped to sustain the ceiling. At about four feet from the floor, each of these quasi-pillars began to be chamfered off at its four angles. Filling up the south-east corner of the room was a small platform approached on three sides by a couple of steps. This sustained a solitary desk about eight feet long, its lower part cased over in front with thin deal boards, so as to shut off from view the nether extremities of whosoever might be sitting at it.—On the general level of the floor below, along the whole length of the southern and northern sides of the chamber, were narrow desks set close against the wall, with benches arranged at their outer side. At right angles to these, and consequently running out, on each side into the apartment, stood a series of shorter desks, with double slopes, and benches placed on either side. Through the whole length of the room from west to east, between the ends of the two sets of cross benches, a wide space remained vacant. Every object and surface within this interior, were of the tawny hue which unpainted pine gradually assumes. Many were the gashes that had furtively been made in the ledges of the desks and on the exterior angles of the benches; many the ducts cut in the slopes of the desks for spilt ink or other fluid; many the small cell, with sliding lid, for the incarceration of fly or spider; many the initials and dates carved here, and on other convenient surfaces, on the wainscot and the four posts.

On the benches and at the desks enumerated and described, on either side, were ordinarily to be seen the figures and groups which usually fill up a school-interior, all busily engaged in one or other of the many matters customary in the training and informing the minds of boys. Here, at one time, was to be heard, on every side, the mingled but subdued sound of voices conning or repeating tasks, answering and putting questions: at another time, the commotion arising out of a transposition of classes, or the breaking up of the whole assembly into a fresh set of classes; at another time, a hushed stillness preparatory to some expected allocution, or consequent on some rebuke or admonition. It was manifest, at a glance, that the whole scene was under the spell of a skilled disciplinarian.

Here, again, the presiding genius of the place was Dr. Strachan. From a boy he had been in the successful discharge of the duties of a schoolmaster. At the early age of sixteen we find that he was in charge of a school at Carmyllie, with the grown-up sons of the neighbouring farmers, and of some of the neighbouring clergy, well under control. At that period he was still keeping his terms and attending lectures, during the winter months, at King's College, Aberdeen. Two years afterwards he got a slightly better appointment of the same kind at Denino, still pursuing his academical studies, gathering, as is evident from his own memoranda, a considerable knowledge of men and things, and forming friendships that proved life-long. Of his stay at Denino he says, in 1800: "The two years which I spent at Denino were perhaps as happy as any in my life; much more than any time since." "At Denino," the same early document states, "I learned to think for myself. Dr. Brown [the parish-minister of the place, afterwards professor at Glasgow,] corrected many of my false notions. Thomas Duncan [afterwards a professor at St. Andrews] taught me to use my reason and to employ the small share of

penetration I possess in distinguishing truth from error.. I began to extend my thoughts to abstract and general ideas ; and to summon the author to the bar of my reason. I learned to discriminate between hypotheses and facts, and to separate the ebullitions of fancy from the deductions of reason. It is not to be supposed that I could or can do these things perfectly ; but I began to apply my powers : my skill is still increasing."—Then for two years more, and up to the moment of his bold determination to make trial of his fortunes in the new world beyond the seas, he is in charge of the parish-school of Kettle. We have before us a list of his school there, March the 22nd, 1798. The names amount to eighty-two. After each, certain initials are placed denoting disposition and capability, and the direction of any particular talent. Among these names are to be read that of D. Wilkie, afterwards the artist, and that of J. Barclay, afterwards the naval commander here on Lake Erie. We believe that Thomas Campbell, author of the Pleasures of Hope, was also for a time under his care.

In the history of Dr. Strachan's educational labours in Canada, the school at York presents fewer points of interest than that at Cornwall, which is rendered illustrious by having had enrolled on its books so many names familiar in the annals of Upper Canada. Among the forty-two subscribers to an address accompaning a piece of Plate in 1833, there are Robinsons, and Macaulays, and M'Donells, and M'Leans, and Joneses, and Stantons, and Bethunes ; a Jarvis, a Chewett, a Boulton, a Vankoughnet, a Smith of Kingston, an Anderson ; with some others now less known : and so illustrative is that address of the skill and earnest care of the instructor on the one hand, and of the value set upon his efforts by his scholars, on the other, after the lapse of many years, that we are induced to give here a short extract from it. "Our young minds," the signers of the address in 1833 say, referring to their school-days in Cornwall—"our young minds received there an impression which has scarcely become fainter from time of the deep and sincere interest which you took, not only in our advancement in learning and science, but in all that concerned our happiness or could effect our future prospects in life." To which Dr. Strachan replies by saying, among many other excellent things—"It has ever been my conviction that our scholars should be considered for the time our children ; and that as parents we should study their peculiar dispositions, if we really wish to improve them ; for if we feel not something of the tender relation of parents towards them, we cannot expect to be successful in their education. It was on this principle I attempted to proceed : strict justice tempered with parental kindness : and the present joyful meeting evinces its triumph : it treats the sentiments and feelings of scholars with proper consideration ; and while it gives the heart and affections full freedom to shew themselves in filial gratitude on the one side, and fatherly affection on the other, it proves that unsparing labour accompanied with continual anxiety for the learner's progress never fails to ensure success and to produce a friendship between master and scholar which time can never dissolve."

XII.—DISTRICT GRAMMAR SCHOOL—*(Continued.)*

Notwithstanding the greater glory of the school at Cornwall, (of which institution we may say, in passing, there is an engraving in the board-room of our Mechanics' Institute,) the lists of the school at York always presented a strong array of the old, well-known and even distinguished, Upper Canadian names. This will be seen by a perusal of the following document, which will also give an idea of the variety of matters to which attention was given in the school. The numerous familiar family names that we shall at once recognize, will require no explanatory comments. The intervals between the calling up of each separate class for examination appear to have been very plentifully filled up with recitations and debates. "Order of Examination of the Home District Grammar School [at York]. Wednesday, 11th August, 1819. First Day. The Latin and Greek Classics. Euclid and Trigonometry. Thursday, 12th August. Second Day. To commence at 10 o'clock. Prologue, by Robert Baldwin.—Reading Class.—George Strachan, The Excellence of the Bible. Thomas Ridout, The Man of Ross. James McDonell, Liberty and Slavery. St. George Baldwin, The Sword. William McMurray, Soliloquy on Sleep. Arithmetic Class.—James Smith, The Sporting Clergyman. William Boulton, jun., The Poet's New Year's Gift. Richard Oates, Ode to Apollo. Orville Cassel, The Rose.—Book-keeping.—William Myers, My Mother. Francis Heward, My Father. George Dawson, Lapland.—First Grammar Class.—Second Grammar Class.—Debate on the Slave Trade. For the

Abolition: Francis Ridout, John Fitzgerald, William Allan, George Boulton, Henry Heward, William Baldwin, John Ridout, John Doyle, James Strachan. Against the Abolition: Abraham Nelles, James Baby, James Doyle, Charles Heward, Allan McDonell, James Myers, Charles Ridout, William Boulton, Walker Smith.—First Geography Class.—Second Geography Class.—James Dawson, The Boy that told Lies. James Bigelow, The Vagrant. Thomas Glasco, The Parish Workhouse. Edward Glennon, The Apothecary.—Natural History.—Debate by the Young Boys: Sir William Strickland, Charles Heward. Lord Morpeth, John Owens. Lord Hervey, John Ridout. Mr. Plomer, Raymond Baby. Sir William Yonge, John Fitzgerald. Sir William Windham, John Boulton. Mr. Henry Pelham, Henry Heward. Mr. Bernard, George Strachan. Mr. Noel, William Baldwin. Mr. Shippen, James Baby. Sir Robert Walpole, S. Givins and J. Doyle. Mr. Horace Walpole, James Myers. Mr. Pulteney, Charles Baby.—Civil History.—William Boulton, The Patriot. Francis Ridout, The Grave of Sir John Moore. Saltern Givins, Great Britain. John Boulton, Eulogy on Mr. Pitt. Warren Claus, The Indian Warrior. Charles Heward, The Soldier's Dream. William Boulton, The Heroes of Waterloo.—Catechism.—Debate on the College at Calcutta. Speakers: Mr. Canning, Robert Baldwin. Sir Francis Baring, John Doyle. Mr. Wainwright, Mark Burnham. Mr. Thornton, John Knott. Sir D. Scott, William Boulton. Lord Eldon, Warren Claus. Sir S. Lawrence, Allan Macaulay. Lord Hawkesbury, Abraham Nelles. Lord Bathurst, James McGill Strachan. Sir Thomas Metcalf, Walker Smith. Lord Teignmouth, Horace Ridout.—Religious Questions and Lectures.—James McGill Strachan, Anniversary of the York and Montreal Colleges anticipated for 1st January, 1822. Epilogue, by Horace Ridout."

In the Prologue pronounced by "Robert Baldwin," the administration of Hastings in India is eulogised:

"Her powerful viceroy, Hastings, leads the way
For radiant Truth to gain imperial sway:
The arts and sciences, for ages lost,
Roused at his call, revisit Brahma's coast."

Sir William Jones is also thus apostrophized, in connection with his "Asiatic researches":

"Thy comprehensive genius soon explored
The Learning vast which former times had stored."

The Marquis of Wellesley is alluded to, and the College founded by him at Calcutta:

"At his command the splendid structures rise:
Around the Brahmins stand in vast surprise."

The founding of a Seat of Learning in Calcutta suggests the necessity of a similar institution in Canada. A good beginning, it is said, had been here made in the way of lesser institutions: the prologue then proceeds:

"Yet much remains for some aspiring son,
Whose liberal soul from that, desires renown,
Which gains for Wellesley a lasting crown;
Some general structures in these wilds to rear,
Where every art and science may appear."

Sir Peregrine Maitland, who probably was present, is told that he might in this manner immortalize his name:

"O Maitland blest! this proud distinction woos
Thy quick acceptance, back'd by every muse;
Those feelings, too, which joyful fancy knew
When Learning's germs first open'd to thy view,
Bid you to thousands smoothe the thorny road,
Which leads to glorious Science' bright abode."

"The Anniversary of the York and Montreal Colleges anticipated" is a kind of Pindaric Ode to Gratitude: especially it is therein set forth that offerings of thankfulness are due to benevolent souls in Britain:

"For often there in pensive mood
They ponder deeply on the good
They may on Canada bestow—
And College Halls appear, and streams of Learning flow!"

The "Epilogue" to the day's performances is a humourous dissertation in doggrel verse on United States' innovations in the English Language; a pupil of the school is supposed to complain of the conduct of the master:

"Between ourselves, and just to speak my mind,
In English Grammar, Master's much behind:
I speak the honest truth—I hate to dash—
He bounds our task by Murray, Lowth and Ashe.
I told him once that Abercrombie, moved
By genius deep, had Murray's plan improved.
He frowned upon me, turning up his nose,
And said the man had ta'en a maddening dose.
Once in my theme I put the word *progress*—
He sentenced twenty lines, without redress.
Again for 'measure' I transcribed 'endeavour'—
And all the live-long day I lost his favour." &c., &c.

We have ourselves a good personal recollection of the system of the school at York, and of the interest which it succeeded in awakening in the subjects taught. The custom of mutual questioning in classes, under the eye of the master, was well adapted to induce real research and to impress facts on the mind when discovered. In the higher classes each lad in turn was required to furnish a set of questions to be put by himself to his class-fellows, on a given subject, with the understanding that he should be ready to set the answerer right should he prove wrong: and again: any lad who should be deemed competent was permitted to challenge another, or several others, to read or recite select rhetorical pieces: a memorandum of the challenge was recorded; and, at the time appointed, the contest came off, the class or the school deciding the superiority in each case, subject to the criticism and disallowance of the master. It will be seen from the matters embraced in the programme given above, that the object aimed at was a speedy and real preparation for actual life. The master, in this instance, was disembarrassed of the traditions which, at the period now referred to, often rendered the education of a young man a cumbersome, unintelligent and tedious thing. The circumstances of his own youth had evidently led him to free himself from routine. He himself was an example, in addition to many another Scottish-trained man of eminence that might be named, of the early age at which a youth of good parts and sincere, enlightened purpose, may be prepared for the duties of actual life, when not caught in the constrictor-coils of custom, which, under the old English Public School system of sixty years since, used sometimes to torture parent and son for such a long series of years. His methods of instruction were productive, for others, of the results realized in his own case. His distinguished Cornwall pupils were all, we believe, usefully and successfully engaged in the real work of life in very early manhood. "The time allowed in a new country like this," he said to his pupils at Cornwall in 1807, "is scarcely sufficient to sow the most necessary seed; very great progress is not therefore to be expected: if the principles are properly engrafted we have done well."—In the same address his own mode of proceeding is thus dwelt upon: "In conducting your education, one of my principal objects has always been to fit you for discharging with credit the duties of any office to which you may hereafter be called. To accomplish this, it was necessary for you to be accustomed frequently to depend upon, and think for yourselves: accordingly I have always encouraged this disposition, which, when preserved within due bounds, is one of the greatest benefits that can possibly be acquired. To enable you to think with advantage, I not only regulated your tasks in such a manner as to exercise your judgment, but extended your views beyond the meagre routine of study usually adopted in schools; for, in my opinion, several branches of science may be taught with advantage at a much earlier age than is generally supposed. We made a mystery of nothing: on the contrary, we entered minutely into every particular, and patiently explained by what progressive steps certain results were obtained. It has ever been my custom, before

sending a class to their seats, to ask myself whether they had learned anything; and I was always exceedingly mortified if I had not the agreeable conviction that they had made some improvement. Let none of you, however, suppose that what you have learned here is sufficient; on the contrary, you are to remember that we have laid only the foundation. The superstructure must be laid by yourselves." Here is an account of his method of teaching Arithmetic, taken from the introduction to a little work on the subject, published by himself in 1809: "I divide my pupils," he says, "into separate classes, according to their progress. Each class has one or more sums to produce every day, neatly wrought upon their slates: the work is carefully examined; after which I command every figure to be blotted out, and the sums to be wrought under my eye. The one whom I happen to pitch upon first, gives, with an audible voice, the rules and reasons for every step; and as he proceeds the rest silently work along with him, figure for figure, but ready to correct him if he blunder, that they may get his place. As soon as this one is finished, the work is again blotted out, and another called upon to work the question aloud as before, while the rest again proceed along with him in silence, and so on round the whole class. By this method the principles are fixed in the mind; and he must be a very dull boy indeed who does not understand every question thoroughly before he leaves it. This method of teaching Arithmetic possesses this important advantage, that it may be pursued without interrupting the pupils' progress in any other useful study. The same method of teaching Algebra has been used with equal success. Such a plan is certainly very laborious, but it will be found successful; and he that is anxious to spare labour ought not to be a public Teacher. When boys remain long enough, it has been my custom to teach them the theory, and give them a number of curious questions in Geography, Natural Philosophy and Astronomy, a specimen of which may be seen in the questions placed before the Appendix."

The youths to be dealt with in early Canadian schools were not all of the meek, submissive species. With some of them occasionally a sharp regimen was necessary; and it was adopted without hesitation. On this point, the Address just quoted, thus speaks: "One of the greatest advantages you have derived from your education here, arises from the strictness of our discipline. Those of you who have not already perceived how much your tranquillity depends upon the proper regulation of the temper, will soon be made sensible of it as you advance in years. You will find people who have never known what it is to be in habitual subjection to precept and just authority, breaking forth into violence and outrage on the most frivolous occasions. The passions of such persons, when once roused, soon become ungovernable; and that impatience of restraint, which they have been allowed to indulge, embitters the greatest portion of their lives. Accustomed to despise the barriers erected by reason, they rush forward to indulgence, without regarding the consequences. Hence arises much of that wretchedness and disorder to be met with in society. Now the discipline necessary to correct the impetuosity of the passions is often found nowhere but in well-regulated schools: for though it should be the first care of parents, they are too apt to be blinded by affection, and grant liberties to their children which reason disapproves. * * * That discipline therefore, which you have sometimes thought irksome will henceforth present itself in a very different light. It will appear the teacher of a habit of the greatest consequence in the regulation of your future conduct; and you will value it as the promoter of that decent and steady command of temper so very essential to happiness, and so useful in our intercourse with mankind." These remarks on discipline will be the more appreciated, when it is recollected that during the time of the early settlements in this country, the sons of even the most respectable families were brought into contact with semi-barbarous characters. A sporting ramble through the woods, a fishing excursion on the waters, could not be undertaken without communications with Indians and half-breeds and bad specimens of the French *voyageur*. It was from such sources that a certain idea was derived which, as we remember, was in great vogue among the more fractious of the lads at the school at York. The proposition circulated about, whenever anything went counter to their notions, always was "to run away to the nor'-west." What that process really involved, or what the "nor'-west" precisely was, were things vaguely realized. A sort of savage "land of Cockaigne," a region of perfect freedom among the Indians, was imagined; and to reach it Lakes Huron and Superior were to be traversed.—At Cornwall the temptation was in another direction: there, the idea was to escape to the eastward: to reach Montreal or Quebec, and get on board of an ocean-going ship, either a man-of-war or merchantman. The flight of severa

lads with such intentions was on one occasion intercepted by the unlooked-for appearance of the head-master by the side of the stage-coach as it was just about to start for Montreal in the dusk of the early morning, with the young truants in or upon it.

As to the modes of discipline:—in the school at York—for minor indiscretions a variety of remedies prevailed. Now and then a lad would be seen standing at one of the posts above mentioned, with his jacket turned inside out: or he might be seen there in a kneeling posture for a certain number of minutes; or standing with the arm extended holding a book. An "ally" or apple brought out inopportunely into view, during the hours of work, might entail the exhibition, article by article, slowly and reluctantly, of all the contents of a pocket. Once, we remember, the furtive but too audible twang of a jewsharp was followed by its owner's being obliged to mount on the top of a desk and perform there an air on the offending instrument for the benefit of the whole school. Occasionally the censors (senior boys appointed to help in keeping order) were sent to cut rods in Mr. McGill's property adjoining the play-ground on the north; but the dire instruments were not often called into requisition: it would only be when some case of unusual obstinacy presented itself, or when some wanton cruelty, or some act or word exhibiting an unmistakable taint of incipient immorality, was proven.

Once a year, before the breaking-up at midsummer, a "feast" was allowed in the school-room at York—a kind of pic-nic to which all that could, contributed in kind—pastry, and other dainties, as well as more substantial viands, of which all partook. It was sometimes a rather riotous affair.

At the south-east corner of the six-acre play-ground, about half-an-acre had been abstracted, as it were, and enclosed: here a public school had been built and put in operation: it was what we should call now a Common School, conducted on the "Bell and Lancaster" principle. Large numbers frequented it. Between the lads attending there, and the boys of the Grammar School, difficulties of course arose: and on many occasions feats of arms, accompanied with considerable risk to life and limb, were performed on both sides, with sticks and stones. Youngsters, ambitious of a character of extra daring, had thus an opportunity of distinguishing themselves in the eyes of their less courageous companions.—The same would-be heroes had many stories to tell of the perils to which they were exposed in their way to and from school. Those of them who came from the western part of the town, had, according to their own shewing, mortal enemies in the men of Ketchum's tannery, with whom it was necessary occasionally to have an encounter. While those who lived to the east of the school, narrated, in response, the attacks experienced or delivered by themselves; in passing Shaw's or Hugill's brewery.

Across the road from the play-ground at York, on the south side, eastward of the church-plot, there was a row of dilapidated wooden buildings, inhabited for the most part by a thriftless and noisy set of people. This set of houses was known in the school as "Irish-town;" and "to raise Irish-town," meant to direct a snowball or other light missive over the play-ground fence, in that direction. Such act was not unfrequently followed by an invasion of the Field from the insulted quarter. Some wide chinks, established between the boards, in one place here, enabled any one so inclined, to get over the fence readily.—We once saw two men, who had quarelled in one of the buildings of Irish-town adjourn from over the road to the play-ground, accompanied by a few approving friends; and there, after stripping to the skin, have a regular fight with fists: after some rounds, a number of men and women interfered and induced the combatants to return to the house from which they had issued forth for the settlement of their dispute.

The Parliamentary Debates, of which mention has more than once been made, took place, on ordinary occasions, in the central part of the school-room; where benches used to be set out opposite to each other, for the temporary accommodation of the speakers These exercises consisted simply of a memoriter repetition, with some action, of speeches, slightly abridged, which had actually been delivered in a real debate on the floor of the House of Commons. But they served to familiarize Canadian lads with the names and character of the great statesmen of England, and with what was to be said on both sides of several important public questions: they also probably awakened in many a young spirit an ambition, afterwards gratified, of being distinguished as a legislator in earnest. On public days the Debates were held up stairs on a platform at the east end of a long room with a partially vaulted ceiling, on the south side of the

building. On this platform the public recitations also took place; and here on some of the anniversaries a drama by Milman or Hannah More was enacted. Here we ourselves took part in one of the hymns or choruses of the "Martyr of Antioch."

XIII.—DISTRICT GRAMMAR SCHOOL—(*Continued.*)

The immediate successor of Dr. Strachan in the school was Mr. Samuel Armour, a graduate of Glasgow, whose profile resembled that of Cicero, as shewn in some engravings. Being fond of sporting, his excitement was great when the flocks of wild pigeons were passing over the town and the report of fire-arms in all directions was to be heard. During the hours of school his attention, on these occasions, would be much drawn off from the class-subjects. In those days there was not a plentiful supply in the town of every book wanted in the school. The only copy that could be procured of a "Eutropius" which we ourselves on a particular occasion required, was one with an English translation at the end. The book was bought, Mr. Armour stipulating that the English portion of the volume should be sewn up: in fact, he himself stitched the leaves together. In Mr. Armour's time there was, for some reason now forgotten, a barring-out. A pile of heavy wood (sticks of cordwood whole used then to be thrust into the great school-room stove) was built against the door within; and the master had to effect, and did effect, an entrance into his school through a window on the north side. Mr. A. became afterwards a clergyman of the English Church, and officiated for many years in the township of Cavan.

The master who succeeded to Mr. Armour was Dr. Phillips, who came out from England to take charge of the school. He had been previously master of a school at Whitchurch, in Herefordshire. His degree was from Cambridge, where he graduated as a B.A. of Queen's in the year 1805. He was a venerable-looking man—the very ideal, outwardly, of an English country parson of an old type—a figure in the general scene, that would have been taken note of congenially by Fuller or Antony à Wood. The costume in which he always appeared (shovel-hat included), was that usually assumed by the senior clergy some years ago. He also wore powder in the hair, except when in mourning. According to the standards of the day he was an accomplished scholar, and a good reader and writer of English. He introduced into the school at York the English public-school traditions of the strictest type. His text books were those published and used at Eton, as Eton then was. The Eton Latin Grammar, without note or comment, displaced "Ruddiman's Rudiments"—the book to which we had previously been accustomed, and which really did give hints of something rational underlying what we learnt out of it. Even the Eton *Greek* Grammar, in its purely mediæval untranslated state, made its appearance: it was through the medium of that very uninviting manual that we obtained our earliest acquaintance with the first elements of the Greek tongue. Our "Palæphatus" and other Extracts in the *Græca Minora* were translated by us, not into English, but into Latin, in which language all the notes and elucidations of difficulties in that book were given. Very many of the Greek "genitives absolute," we remember, were to be rendered by *quum*, with a subjunctive pluperfect—an enormous mystery to us at the time. Our Lexicon was *Schrevelius*, as yet un-Englished. For the Greek Testament we had "Dawson," a vocabulary couched in the Latin tongue, notwithstanding the author's name. The thickets across the path to knowledge were numerous and dense. The Latin translation, line for line, at the end of Clarke's Homer, as also the *Ordo* in the Delphin classics, were held to be mischievous aids, but the help was slight that could be derived from them, as the Latin language itself was not yet grasped. For whatever of the anomalous we moderns may observe in all this, let the good old traditional school-system of England be responsible—not the accomplished and benevolent man who transplanted the system, pure and simple, to Canadian ground. For ourselves: in one point of view, we deem it a piece of singular good fortune to have been subjected for a time to this sort of drill; for it has enabled us to enter with intelligence into the discussions on English education that have marked the era in which we live. Without this morsel of experience we should have known only by vague report at what the reviewers and essayists of England were aiming their attacks. Our early recollections in this regard, we treasure up now among our mental curiosities, with thankfulness; just as we treasure up our memories of the few years which, in the days of our youth, we had an opportunity of passing in the old father-land, while yet mail

coaches and guards and genuine coachmen were extant there; while yet the time-honoured watchman was to be heard patrolling the streets at night and calling the hours. Deprived of this personal experience, how tamely would have read "School-days at Rugby," for example, or "The Scouring of the White Horse," and many another healthy classic in recent English literature—to say nothing of "The Sketch Book," and earlier pieces, which involve numerous allusions to these now vanished entities!—Moreover, we found that our boyish initiation in the Eton formularies, however little they may have contributed to the intellectual furniture of the mind at an early period, had the effect of putting us *en rapport*, in one relation at all events, with a large class in the old country. We found that the stock quotations and scraps of Latin employed to give an air of learning to discourse, "to point a moral and adorn a tale," among the country-clergy of England and among members of Parliament of the ante-Reform-bill period, were mostly relics of school-boy lore derived from Eton books. Fragments of the *as in præsenti*, of the *propria quæ maribus*; shreds from the Syntax, as *vir bonus est quis, ingenuas didicisse*, and a score more, were instantly recognized, and constituted a kind of talismanic mode of communication, making the quoter and the hearer, to some extent, akin. Furthermore: in regard to our honoured and beloved master, Dr. Phillips himself: there is this advantage to be named as enjoyed by those whose lot it was, in this new region, to pass a portion of their impressible youth in the society of such a character: it furnished them with a visible concrete illustration of much that otherwise would have been a vague abstraction in the pictures of English society set before the fancy in the *Spectator*, for instance, or Boswell's *Johnson*, and other standard literary productions of a century ago. As it is, we doubt not that the experience of many of our Canadian coevals corresponds with our own. Whenever we read of the good Vicar of Wakefield, or of any similar personage; when in the Biography of some distinguished man, a kind-hearted old clerical tutor comes upon the scene, or one moulded to be a college-fellow, or one who had actually been a college-fellow, carrying about with him, when down in the country, the tastes and ideas of the academic cloister—it is the figure of Dr. Phillips that rises before the mental vision. And without doubt he was no bad embodiment of the class of English character just alluded to.—He was thoroughly English in his predilections and tone; and he unconsciously left on our plastic selves traces of his own temperament and style.—It was from him we received our first impressions of Cambridge life; of its outer form, at all events; of its traditions and customs; of the Acts and Opponencies in its Schools, and other quaint formalities, still in use in our own undergraduate day, but now abolished: from him we first heard of Trumpington, and St. Mary's, and the Gogmagogs; of Lady Margaret and the cloisters at Queen's; of the wooden bridge and Erasmus' walk, in the gardens of that college; and of many another storied object and spot, afterwards very familiar. A manuscript Journal of a Johnsonian cast kept by Dr. Phillips when a youth, during a tour of his on foot in Wales, lent to us, for perusal, marks an era in our early experience, awakening in us, as it did, our first inklings of travel. The excursion described was a trifling one in itself—only from Whitchurch, in Herefordshire, across the Severn into Wales—but to the unsophisticated fancy of a boy it was invested with a peculiar charm; and it led, we think, in our own case, to many an ambitious ramble, in after years, among cities and men.—In the time of Dr. Phillips there was put up, by subscription, across the whole of the western end of the school-house, over the door, a rough lean-to, of considerable dimensions. A large covered space was thus provided for purposes of recreation in bad weather. This room is memorable as being associated with our first acquaintance with the term "Gymnasium:" that was the title which we were directed to give it.—There is extant, we believe, a good portrait in oil of Dr. Phillips.

We here close our notice of the Old Blue School at York. In many a brain, from time to time, the mention of its name has exercised a spell like that of Wendell Holmes's *Mare Rubrum*; as potent as that was, to summon up memories and shapes from the Red Sea of the Past—

> "Where clad in burning robes are laid
> Life's blossom'd joys untimely shed,
> And where those cherish'd forms are laid
> We miss awhile, and call them dead."

The building itself has been shifted bodily from its original position to the south-east corner of Stanley and Nelson Street. It, the centre of so many associations, is degraded now into being a depôt for "General Stock;" in other words a receptacle for Rags and Old Iron.

The six acres of play-ground are thickly built over. A thoroughfare of ill repute traverses it from west to east. This street was at first called March Street; and under that appellation acquired an evil report. It was hoped that a nobler designation would perhaps elevate the character of the place as the name "Milton Street" had helped to do for the ignoble Grub Street in London. But the purlieus of the neighbourhood continue, unhappily, to be the Alsatia of the town. The filling up of the old breezy field with dwellings, for the most part of a wretched class has driven "the schoolmaster" away from the region. His return to the locality, in some good missionary sense, is much to be wished; and after a time, will probably be an accomplished fact.

CANADIAN INSTITUTE.

ANNUAL REPORT OF THE COUNCIL FOR THE YEAR 1867-'68.

(*Continued from page* 176.)

DONATION OF BOOKS, &c., RECEIVED SINCE LAST ANNUAL REPORT.

From Commissioner T. C. Theaker, United States Patent Office, Washington.

Patent Office Reports, 1862, Vols. I. & II..... 2
" " " 1863, Vols. I. & II..... 2
" " " 1864, Vols. I. & II..... 2
" " " 1865, Vols. I., II. & III..... 3

From the office of the Secretary for India, London.

Magnetical and Meteorlogical Observations made at the Observatory, Bombay, year 1864..... 1

From the Dominion Legislature.

The Statutes of Canada, 31st Vict., 1867, Part 1..... 1
" " 31st Vict., 12th March, 1868, 1st Session, 1st Parliament of Canada, Part 2..... 1

From the Society, per Smithsonian Institute.

Nederlandsch Meteorologisch Iaarboek voor 1866, &c., &c., Utrecht, 1866, Nos. I. & II..... 2

From Peabody Institute, Baltimore.

Catalogue of Books proposed to be Purchased..... 1
The Peabody Institute, Illustrated, City of Baltimore..... 1

Presented to the Library of the Institute in memory of the author by his widow.

Illustrations of the *Genus Carex*, by Francis Boot, M.D., Treasurer of the Linnean Society, Vols. I., II., III. & IV..... 4

From L. Hayden, Esq.

A Book of Chinese Alphabetical Characters..... 1
Chrisi. Clavii Bombergensis in sphaeram Ionnis de sacro Bosco commentarius, Lugduni..... 1
Gisb. Cuperi Harpocrates et Monumenta Antiqua, 1687.

From U. J. Macdonald, Esq.

Inner Africa laid open, &c., by W. Desborough Cooley, London, 1852, Longman..... 1
British Almanacks, Years 1833 and 1848..... 2

(*To be concluded in next number.*)

MONTHLY ABSOLUTE VALUES OF THE MAGNETIC ELEMENTS AT TORONTO,

From 1865 *to* 1868 *inclusive, with the Annual Means from* 1841 *to* 1868,

BY G. T. KINGSTON, M.A.,

DIRECTOR OF THE MAGNETIC OBSERVATORY.

In the *Canadian Journal* for 1865 the absolute values of the magnetic elements at Toronto were given for each month of the years 1856 to 1864, as well as the annual means (as far as they could be procured), from 1841 to 1864.

The following tables shew the monthly means from 1865 to 1868, and the annual means from 1841 to 1868. The methods employed in the determination of the several elements are the same as those explained in the earlier Toronto volumes.

DECLINATION.—The annual means of the Declination from 1841 to 1851 are reprinted from Vols. I. and II. of the Toronto observations. In 1853, '54, '55, approximate annual means are obtained by taking the averages of the results for the months wherein observations were made, each monthly result being corrected for annual variation and secular change, as explained on p. 115 of the *Canadian Journal* for 1865.

INCLINATION.—The annual means of the Inclination for the years 1841 to 1854 are reprinted from the 3rd Toronto volume, p. cxix.

The decrease of the Inclination since its maximum in 1859 is materially interrupted in 1868; but that the interruption does not amount to a reversal is rendered probable from the subsequent determinations, the mean of which from January, 1869, to May, 1869, inclusive, is 75° 16′.4 nearly.

HORIZONTAL FORCE.—The annual means of the Horizontal force from 1845 to 1852, are reprinted from p. cxvii. of the 3rd Toronto volume. The value given as the annual mean for 1855 is an approximation derived from the four months September to December.

MONTHLY ABSOLUTE VALUES OF THE MAGNETIC ELEMENTS AT TORONTO, FROM 1865 TO 1868 INCLUSIVE.

MONTHS.	DECLINATION.				INCLINATION.			
	1865	1866	1867	1868	1865	1866	1867	1868
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
JANUARY	2 22·7	2 27·1	2 28·6	2 30·7	75 20·8	75 20·0	75 18·1	75 20·4
FEBRUARY	2 23·6	2 27·8	2 29·3	2 32·0	20·8	20·0	18·8	19·4
MARCH	2 22·5	2 27·0	2 28·9	2 32·0	21·8	20·0	19·1	19·2
APRIL	2 24·3	2 27·1	2 29·7	2 32·8	21·5	20·1	19·1	20·9
MAY	2 23·5	2 27·4	2 29·1	2 32·9	22·0	20·3	18·6	20·9
JUNE	2 24·3	2 27·0	2 29·1	2 31·6	21·7	19·8	18·9	20·2
JULY	2 24·0	2 27·2	2 29·0	2 34·6	20·2	19·3	18·7	19·6
AUGUST	2 25·8	2 27·7	2 31·1	2 33·8	20·5	18·3	18·8	20·2
SEPTEMBER	2 25·8	2 27·8	2 30·7	2 34·6	21·0	17·7	18·3	20·2
OCTOBER	2 27·4	2 28·6	2 30·3	2 34·0	21·4	17·8	18·7	20·5
NOVEMBER	2 27·6	2 28·6	2 31·0	2 34·5	20·7	18·3	18·9	19·4
DECEMBER	2 26·4	2 28·2	2 31·2	2 35·2	20·2	18·2	19·8	19·6
	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
YEARLY MEANS	2 24·8	2 27·6	2 29·8	2 33·2	75 21·1	75 19·2	75 18·8	75 20·1

MONTHS.	HORIZONTAL FORCE.				TOTAL FORCE.			
	1865	1866	1867	1868	1865	1866	1867	1868
JANUARY	3·493	3·491	3·498	3·497	13·810	13·786	13·785	13·816
FEBRUARY	·493	·491	·493	·501	·807	·787	·776	·819
MARCH	·496	·491	·498	·495	·835	·789	·799	·791
APRIL	·493	·495	·496	·497	·819	·805	·793	·825
MAY	·496	·492	·503	·497	·838	·798	·816	·824
JUNE	·493	·497	·496	·499	·823	·810	·797	·825
JULY	·494	·495	·499	·503	·804	·792	·800	·830
AUGUST	·491	·490	·498	·497	·795	·758	·797	·814
SEPTEMBER	·487	·494	·494	·496	·789	·767	·775	·809
OCTOBER	·485	·493	·496	·496	·787	·762	·789	·820
NOVEMBER	·496	·493	·499	·497	·819	·768	·803	·803
DECEMBER	·492	·494	·500	·500	·794	·773	·830	·819
YEARLY MEANS	3·492	3·493	3·497	3·498	13·810	13·783	13·796	13·816

ANNUAL MEANS OF THE MONTHLY DETERMINATIONS OF THE ABSOLUTE DECLINATION, INCLINATION, HORIZONTAL FORCE, AND TOTAL FORCE, AT TORONTO, 1841 TO 1868 INCLUSIVE.

YEARS.	Declination.	Inclination.	Horizontal Force.	Total Force.	YEARS.
	° ′	° ′			
1841	1 14·3	75 16·6	.....	.....	1841
1842	1 18·9	16·4	.....	.....	1842
1843	.....	14·7	.....	.....	1843
1844	.....	14·8	.....	.....	1844
1845	1 29·1	15·6	3·5443	13·929	1845
1846	1 30·8	15·1	·5381	13·898	1846
1847	1 33·2	15·3	·5342	13·886	1847
1848	1 35·4	18·3	·5299	13·915	1848
1849	1 36·9	18·8	·5328	13·934	1849
1850	1 38·6	20·0	·5280	13·934	1850
1851	1 40·9	20·4	·5255	13·930	1851
1852	.....	20·5	·5110	13·874	1852
1853	1 46·1 *(a)*	22·2	.....	.....	1853
1854	1 48·0 *(b)*	23·0	.....	.....	1854
1855	1 52·3 *(c)*	23·5	.5154 *(d)*	13·937	1855
1856	1 56·3	24·0	·5049	13.905	1856
1857	2 00·5	24·3	·4883	13·844	1857
1858	2 04·5	24·4	·4900	13·852	1858
1859	2 07·4	25.0	·4811	13·825	1859
1860	2 10·6	24·5	·4792	13·811	1860
1861	2 14·3	23·8	·4839	13·817	1861
1862	2 15·7	23·2	·4853	13·814	1862
1863	2 19·1	21·5	·4891	13·803	1863
1864	2 21·9	20·9	·4932	13·811	1864
1865	2 24·8	21·1	·4924	13·810	1865
1866	2 27·6	19·2	·4930	13·783	1866
1867	2 29·8	18·8	·4975	13·796	1867
1868	2 33·2	20·1	·4979	13·816	1868

(a) From determinations in July and August,
(b) From " in Feb. Mar. Apr. & June } corrected for annual and secular variation.
(c) From " in Aug. to Dec. inclusive }
(d) From " in September to December, both inclusive.

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—SEPTEMBER, 1868.

Latitude—43° 39′4 *North*. *Longitude*—5h. 17m. 33s. *West*. *Elevation above Lake Ontario*, 108 *feet*

Day.	Barom. at temp. of 32°. 6 A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 PM	M'E'N.	Excess of Mean above Normal.	Tension of Vapour. 6 A. M	2 P.M.	10 P.M.	M'N.	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Direction of Wind. 6 A.M.	2 P.M.	10 P.M.	Resultant.	Velocity of Wind. 6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN	Rain in inches.	Snow in inches.
					°	°	°	°	°												°							
1	29.553	29.626	29.671	29.6203	60.9	67.7	63.7	64.23	+ 1.20	.441	.613	.517	.523	82	90	87	86	W b N	N b W	N b W	N 35 W	10.0	6.0	1.5	4.88	5.32	...	...
2	.711	.734	.723	.7193	54.4	69.2	63.7	63.85	+ 1.12	.385	.456	.517	.448	91	64	87	76	N b W	S E b E	E	N 89 E	3.6	9.5	6.0	6.56	7.36	...	...
3	.673	.650	.628	.6475	63.0	73.1	67.4	67.70	+ 5.27	.513	.555	.561	.540	89	68	83	90	N N E	S	S E b S	S 55 E	8.6	9.0	10.6	6.86	7.83	.267	...
4	.591	.583	.573	.5853	62.3	73.8	61.6	66.20	+ 4.07	.521	.518	.391	.482	93	62	71	75	E	S S W	W S W	S 46 W	4.6	10.0	2.6	3.95	5.74	...	...
5	.578	.581	.662	.6123	55.4	70.6	58.0	62.05	+ 0.22	.316	.286	.359	.331	72	38	74	61	W b S	W	N W	N 81 W	5.0	15.6	1.0	8.65	8.99	...	...
6	.701	.566	—	—	55.5	64.1	—	—	—	.359	.423	—	—	82	70	—	—	N W	S E b E	N E	N 67 E	4.0	7.2	9.7	4.53	7.33	1.080	...
7	.480	.604	.689	.6015	57.2	67.7	61.2	62.28	+ 1.13	.439	.464	.410	.433	94	68	76	77	N	S	S W b S	N 35 W	14.2	7.0	2.8	1.03	5.24	...	...
8	.658	.544	.334	.5058	51.8	69.2	64.8	63.32	+ 2.58	.353	.523	.569	.504	92	73	92	86	W b S	S E	S E b S	S 26 E	2.6	11.2	5.6	5.75	6.72	1.585	...
9	.370	.441	.521	.4493	63.7	71.7	63.4	66.87	+ 6.52	.557	.477	.469	.507	94	61	80	77	S S W	W b N	W b N	N 67 W	1.5	4.4	1.0	4.10	4.42	...	...
10	.546	.501	.545	.5243	52.6	68.1	67.7	64.05	+ 4.00	.332	.499	.571	.483	84	73	84	80	N N E	E b N	Calm	N 82 E	3.2	5.2	0.0	2.61	2.76	inap.	...
11	.622	.662	.718	.6695	63.4	71.0	67.4	67.73	+ 8.08	.560	.641	.617	.620	96	84	92	91	Calm	E b S	N E b E	N 83 E	0.0	7.2	4.0	3.28	3.68	...	...
12	.694	.612	.565	.6137	67.4	70.2	68.4	68.73	+ 9.50	.632	.652	.662	.649	94	88	95	92	E b N	S E	Calm	N 78 E	7.6	5.0	0.0	2.71	3.67	inap.	...
13	.687	.729	—	—	64.5	69.5	—	—	—	.507	.452	—	—	83	63	—	—	N W b N	N N W	N N W	N 34 W	16.6	10.2	3.8	9.94	10.02	...	...
14	.864	.831	.818	.8368	47.1	63.0	55.4	56.68	— 1.65	.299	.337	.327	.327	92	59	74	72	N	E N E	N E b E	N 83 E	5.6	9.6	1.0	4.51	5.64	...	...
15	.735	.606	.433	.5778	59.0	64.8	66.6	63.72	+ 5.80	.403	.489	.572	.488	81	79	87	82	S S E	E b S	S b W	S 60 W	6.8	6.2	7.2	2.09	10.37	.210	...
16	.615	.763	.834	.7510	49.7	54.0	39.6	47.93	— 9.58	.328	.150	.194	.223	91	35	79	68	W N W	N W b W	W N W	N 61 W	19.8	23.6	5.0	12.57	12.64	...	...
17	.845	.847	.884	.8653	36.7	53.3	43.9	46.32	—10.68	.188	.210	.218	.209	86	50	75	67	W N W	S W b W	W b S	N 86 W	3.5	8.5	2.6	6.14	6.33	...	...
18	.934	.923	.957	.9393	37.8	60.9	47.9	50.00	— 6.62	.199	.297	.259	.254	87	56	77	71	W b S	S	S W	S 23 W	0.6	11.6	3.0	5.71	5.99	...	...
19	.998	.840	.642	.8173	45.4	61.2	57.2	55.62	— 0.50	.243	.422	.439	.376	80	78	94	83	S W	S E	S E b S	S 5 E	5.0	9.0	6.0	7.63	8.47	.285	...
20	.550	.587	—	—	58.3	58.3	—	—	—	.476	.355	—	—	98	73	—	—	S W b S	N W b N	N W	N 85 W	5.2	24.4	3.4	6.65	9.95	.055	...
21	.862	.769	.654	.7497	36.7	49.3	42.8	44.07	—11.06	.171	.202	.223	.201	78	57	81	70	N	S E	N b E	N 88 E	8.2	6.4	8.2	3.76	4.37	...	...
22	.523	.431	.385	.4447	47.2	56.9	56.2	53.78	— 0.85	.279	.351	.440	.350	86	76	98	84	E b N	E b S	E	S 86 E	2.4	5.5	2.0	3.88	3.77	.085	...
23	.410	.675	.868	.6768	56.5	56.5	41.4	50.27	— 3.95	.435	.228	.204	.263	96	50	78	71	S	W b N	W N W	N 68 W	3.2	14.2	0.6	8.05	8.37	inap.	...
24	.935	.830	.693	.8068	42.8	52.6	45.7	47.27	— 6.48	.213	.219	.259	.234	77	54	84	73	N W b W	E S E	E b N	N 74 E	0.8	5.6	7.0	5.15	7.21	.255	...
25	.557	.531	.601	.5652	41.7	46.8	45.7	44.63	— 8.60	.246	.253	.253	.254	93	79	83	86	N N E	N b E	Calm	N 19 E	12.6	4.8	0.0	3.44	3.50	inap.	...
26	.716	.712	.639	.6857	38.9	53.3	50.8	48.67	— 4.07	.203	.279	.303	.268	86	69	81	78	N b E	S E b E	E S E	S 57 E	0.5	8.0	13.0	5.97	6.47	...	...
27	.571	.489	—	—	50.4	56.9	—	—	—	.330	.374	—	—	90	80	—	—	S b E	S b E	S E b S	S 7 E	1.2	3.2	7.7	4.54	5.91	.385	...
28	.434	.543	.650	.5570	51.1	56.9	47.2	52.03	+ 0.29	.352	.296	.279	.309	94	64	86	78	S W b W	W b N	W b S	S 82 W	6.6	17.0	0.5	7.26	7.60	.012	...
29	.683	.653	.742	.6897	41.4	54.0	41.0	45.48	— 5.83	.232	.200	.218	.217	89	47	85	72	W S W	W	N W W	N 86 W	2.2	17.5	1.5	7.54	8.52	.020	...
30	.563	.537	.798	.6458	47.2	54.4	42.1	48.12	— 2.70	.268	.362	.178	.264	82	86	66	76	S S W	W S W	N W b N	N 63 W	2.6	8.0	3.6	2.75	6.12	inap.	...
M	29.6596	29.6649	29.6626	29.6599	51.20	61.03	55.02	56.60	— 1.49	.350	.384	.385	.375	88	66	83	77	.....	.....	.....	.....	5.61	9.55	3.86	.....	6.68	4.239	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR SEPTEMBER, 1868.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 29.998 at 6 a.m. on 19th.
Lowest Barometer . . . . . 29.234 at 10 p.m. on 8th. } Monthly range= 0.664 inches.

Self-registering Ther.

Maximum temperature . . . . 75°5 on 9th.
Minimum temperature . . . . 36°0 on 30th. } Monthly range=39°5

Mean maximum temperature . . 64°30
Mean minimum temperature . . 50°12 } Mean daily range=14°18

Greatest daily range . . . . . 26°4 from a.m. to p.m. of 18th.
Least daily range . . . . . 7°5 from a.m. to p.m. of 13th.

Warmest day . . . 12th...Mean temperature . . . 68°73
Coldest day . . . . 21st...Mean temperature . . . 44°07 } Difference=24°66.

Maximum Solar . . . . . 93°0 on 11th.
Radiation Terrestrial . . . . . 24°4 on 30th. } Monthly range=68°6

Aurora observed on 5 nights, viz.:—5th, 7th, 20th, 25th and 30th.
Possible to see Aurora on 19 nights; impossible on 11 nights.
Raining on 6 days; depth, 4.239 inches; duration of fall, 55.8 hours.
Mean of cloudiness=0.62. Most cloudy hour observed, 2 p.m.; mean, 0.72; least do. do., 10 p.m.; mean, 0.55.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1402.76	1231.37	1423.91	2031.05

Resultant direction, N. 74° W.; resultant velocity, 0.88.
Mean velocity, 6 68 miles per hour.
Maximum velocity, 27.0 miles, from 8 to 9 a.m. of 16th.

Most windy day, 16th; mean velocity, 12 64 miles per hour.
Least windy day, 10th; mean velocity, 2.75 miles per hour. } Difference, 9.89 miles.

Most windy hour, 11 a.m.; mean velocity, 10 18 miles per hour.
Least windy hour, 10 p.m.; mean velocity, 3.62 miles per hour. } Difference 6.56 miles.

4th. Heavy thunderstorm, a.m.
8th. Heavy thunderstorm at night.
15th. Thunderstorm.
17th. First recorded hear frost of season.
Sheet lightning on the 3rd, 9th. 11th, 12th, and 27th.
Fog on 11th, 12th, 20th, and 26th.

COMPARATIVE TABLE FOR SEPTEMBER.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1840	54.0	— 4.0	73.6	30.2	43.4	4	1.380	...	...	...	...	...
1841	61.3	+ 3.3	80.2	34.2	46.0	9	3.340	...	...	...	...	0.26 lbs.
1842	55.7	— 2.3	83.8	27.9	55.9	12	6.160	...	...	...	...	0.45
1843	59.1	+ 1.1	89.0	32.2	56.8	10	9.760	...	...	...	...	0.57
1844	58.6	+ 0.6	81.8	28.2	53.6	4	Imp	...	...	...	...	0.26
1845	56.0	— 2.0	79.6	34.0	45.6	16	6.245	...	...	...	...	0.34
1846	63.6	+ 5.6	84.3	37.3	47.0	4	4.595	...	...	...	...	0.33
1847	55.6	— 2.4	74.5	35.0	39.5	15	6.665	...	...	...	...	0.33
1848	54.2	— 3.8	80.4	28.1	52.3	11	3.115	...	...	N 71 W	2.38	5.81 miles.
1849	58.2	+ 0.2	80.1	32.7	47.4	9	1.480	...	...	N 75 W	0.69	4.23
1850	56.5	— 1.5	76.0	29.5	46.5	11	1.735	...	...	S 65 W	1.02	4.78
1851	60.0	+ 2.0	86.3	32.0	54.3	9	2.665	...	...	N 14 E	1.03	5.45
1852	57.5	— 0.5	81.8	35.8	46.0	10	3.630	...	...	N 77 W	0.53	4.60
1853	58.8	+ 0.8	85.5	33.9	51.6	12	5.140	...	...	N	1.06	4.33
1854	61.0	+ 3.0	93.6	35.8	57.8	14	5.375	...	...	N 22 W	1.33	4.04
1855	59.5	+ 1.5	82.6	33.0	49.6	12	5.585	...	...	N 20 E	1.29	7.61
1856	57.1	— 0.9	78.4	35.0	43.4	13	4.105	...	...	S 79 W	1.98	6.53
1857	58.6	+ 0.6	82.0	34.1	47.9	11	2.640	...	...	N 68 W	1.61	5.55
1858	59.1	+ 1.1	81.4	35.6	45.8	8	0.735	...	...	S 74 W	1.53	5.09
1859	55.2	— 2.8	75.4	35.7	39.7	15	3.525	...	...	N 44 W	1.60	6.36
1860	55.3	— 2.7	75.8	28.7	47.1	14	1.959	...	...	N 71 W	2.63	5.79
1861	59.1	+ 1.1	78.8	37.1	41.7	17	3.607	...	...	N 71 W	1.39	4.81
1862	59.6	+ 1.6	79.4	39.0	40.4	9	2.344	...	...	N 59 W	1.07	5.11
1863	55.9	— 2.1	80.0	31.4	48.6	8	1.235	...	...	N 16 W	0.92	6.46
1864	56.4	— 1.6	73.0	37.8	35.2	11	2.508	...	...	N 38 W	1.89	7.06
1865	64.5	+ 6.5	90.5	42.0	48.5	12	2.450	...	...	S 56 E	0.47	4.12
1866	55.2	— 2.8	80.0	34.4	45.6	15	5.657	...	...	N 33 W	1.45	4.63
1867	57.9	— 0.1	87.0	31.8	55.2	9	1.226	...	...	N 37 W	1.48	5.43
1868	56.6	— 1.4	75.5	36.0	39.5	16	4.239	...	...	N 74 W	0.88	6.68
Results to 1867.	57.98	.....	81.24	33.66	47.58	11.11	3.661	...	...	N 54 W	1.09	5.42
Exc. for 1868.	—1.38	.....	—5.74	+2.34	—8.08	+4.89	+0.578	...	...	...	...	+1.26

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—OCTOBER, 1868.

Latitude—43° 39′4 *North*. *Longitude*—5h. 17m. 33s. *West*. *Elevation above Lake Ontario*, 108 *feet*.

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Result't.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6. A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	M'N		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result't.	M'N.		
					°	°	°	°	°												°							
1	29.948	29.947	29.898	29.9277	34.5	45.4	40.7	40.72	— 9.70	.173	.169	.170	.173	86	55	66	68	N E b N	E b N	N E b E	N 60 E	7.0	9.0	4.0	6.44	6.88	...	...
2	.875	.843	.876	.8670	37.4	53.6	44.3	45.93	— 4.00	.162	.276	.230	.223	72	67	79	72	N E b N	S E b S	E b N	N 78 E	4.5	7.0	0.5	2.22	3.62	...	...
3	.961	.963	.922	.9416	40.3	52.2	40.3	44.63	— 4.90	.176	.201	.193	.192	69	50	77	65	N b E	S E b S	E N E	N 66 E	7.8	9.6	3.4	3.79	5.37	...	...
4	.868	.747	—	—	37.0	52.6	—	—	—	.200	.269	—	—	91	67	—	—	N E	E S E	E b N	S 85 E	4.2	6.0	1.7	3.35	3.52	...	...
5	.394	.271	.363	.3493	42.5	59.4	51.5	52.08	+ 3.47	.253	.333	.283	.316	93	69	74	81	Calm.	W b S	W	S 72 W	0.0	12.8	9.0	6.03	6.91	inap.	...
6	.578	.660	.586	.6096	43.9	54.0	51.8	50.63	+ 2.42	.244	.282	.310	.280	86	67	80	76	W b S	S	S E b E	S 8 W	3.0	8.0	11.2	2.60	5.62	...	...
7	.493	.292	.164	.3056	52.2	64.5	62.3	59.53	+11.68	.337	.443	.434	.405	86	73	77	79	E S E	S b W	S b W	S 29 W	9.8	16.8	11.5	8.67	12.04	.120	...
8	.440	.695	.808	.6688	43.5	39.2	39.9	40.58	— 6.87	.214	.156	.206	.188	75	64	84	74	W b N	N W	S W b W	N 84 W	24.0	17.6	7.0	10.07	11.26	...	...
9	.833	.740	.696	.7523	34.5	48.2	45.4	43.67	— 3.40	.145	.226	.253	.212	75	66	83	73	W b S	S S E	Calm.	S 2 E	2.0	8.6	0.0	5.43	5.77	...	...
10	.663	.613	.513	.5947	47.2	54.4	49.0	50.02	— 3.86	.277	.303	.256	.245	86	48	74	69	S S E	S E	S E	S 21 E	7.0	10.2	0.8	5.80	6.12	...	...
11	.461	.553	—	—	47.9	61.2	—	—	—	.288	.398	—	—	86	73	—	—	S W	W S W	W N W	S 82 W	4.8	15.0	4.3	7.98	8.77	...	...
12	.772	.806	.903	.8340	39.6	55.4	40.7	45.35	— 0.62	.210	.179	.180	.190	86	40	70	65	W N W	W b N	N W b W	N 77 W	3.4	16.0	1.0	7.95	8.24	...	...
13	.923	.857	.852	.8723	38.8	48.2	41.4	43.30	— 2.27	.213	.264	.232	.236	90	79	89	84	N W b W	N W	S W	N 72 W	3.2	3.3	0.8	2.00	2.77	.025	...
14	.829	.774	.811	.7843	37.4	49.3	41.0	42.45	— 2.82	.196	.281	.246	.219	87	80	95	80	N N W	S S E	S E	S 68 E	5.6	8.9	4.0	1.96	3.58	...	...
15	.685	.643	.651	.6612	32.0	48.4	38.8	40.87	— 3.98	.166	.294	.196	.224	91	86	82	86	Calm.	S E b S	S b E	S 24 E	0.0	7.2	1.4	2.13	2.66	...	...
16	.667	.691	.710	.6958	36.3	43.5	38.1	39.73	— 4.80	.193	.194	.187	.199	90	68	81	81	S b E	N b W	N W b N	N 22 W	4.0	9.4	3.6	7.01	8.42	inap.	...
17	.937	30.098	30.136	30.0705	29.5	37.0	25.9	30.73	—13.50	.144	.113	.120	.116	87	51	86	69	N b E	N W b W	W N W	N 51 W	12.6	23.8	3.5	9.91	10.71	...	...
18	30.068	29.930	—	—	25.2	43.5	—	—	—	.122	.141	—	—	90	50	—	—	W S W	S W b W	S	S 38 W	4.5	6.3	1.2	2.80	3.69	inap.	...
19	29.683	.621	29.744	29.6640	38.1	45.0	36.0	39.33	— 4.45	.213	.221	.180	.204	93	74	85	85	E b N	W b N	W b S	S 78 W	0.8	16.0	3.5	7.16	7.50	...	...
20	.790	.807	.805	.8040	39.6	46.1	42.1	42.60	— 0.96	.210	.216	.213	.217	87	69	79	80	W b S	W	W N W	N 55 W	1.0	7.5	0.4	2.28	4.83	.020	...
21	.740	.674	.684	.6948	38.8	37.4	33.1	36.06	— 7.17	.220	.196	.167	.191	94	87	88	89	E N E	E N E	N E b N	N 41 E	10.0	11.0	7.0	8.48	9.98	.180	2.0
22	.736	.833	.992	.8702	30.9	32.4	30.6	31.12	—11.86	.157	.146	.123	.142	90	79	72	81	N b W	N W	N W b N	N 30 W	12.8	21.2	10.8	12.31	12.54	...	inap.
23	30.100	30.119	30.064	30.0957	24.8	35.3	31.6	30.65	—12.10	.120	.188	.140	.132	90	65	78	78	N N W	S W b S	S W b W	S 69 W	3.2	5.0	0.6	1.22	1.95	...	...
24	29.998	29.878	29.819	29.8922	27.0	45.7	42.8	39.47	— 3.03	.129	.221	.218	.196	88	72	77	79	Calm.	S b W	S b W	S 9 W	0.0	9.2	3.2	4.55	4.90	...	...
25	.708	.671	—	—	43.9	48.6	—	—	—	.263	.292	—	—	92	85	—	—	E b S	E S E	N W b W	N 27 W	4.4	2.8	14.7	3.50	6.52	.155	...
26	.798	.844	.780	.8056	46.1	47.9	44.6	45.85	+ 3.87	.273	.239	.245	.245	87	71	83	79	N W b N	S E	E S E	S 54 E	7.2	4.8	6.0	1.63	3.99	...	...
27	.590	.305	.323	.3977	42.1	56.0	50.4	50.10	+ 8.32	.241	.299	.308	.291	89	66	84	80	E	S b W	S W	S 28 W	4.0	14.0	4.0	6.67	10.25	inap	...
28	.462	.736	.910	.7292	49.0	41.7	30.2	38.60	— 2.88	.297	.175	.149	.191	85	65	89	79	W	W b N	W N W	N 66 W	12.6	15.2	4.5	11.92	12.03	...	...
29	30.029	30.087	30.124	30.0958	27.0	35.2	31.3	31.40	— 9.87	.129	.127	.123	.127	88	62	69	73	W N W	E b N	N E	N 75 E	1.6	4.0	7.0	4.79	6.00	...	...
30	.122	29.996	29.845	29.9760	36.7	42.5	44.6	41.68	— 0.73	.145	.164	.235	.183	67	59	80	68	E	E	E b S	N 89 E	16.0	18.2	8.2	14.27	14.29	...	...
31	29.636	.396	.417	.4668	47.1	48.6	45.4	46.55	+ 5.80	.299	.312	.272	.289	92	90	90	91	E b S	S b W	S W b S	S 26 W	8.8	7.6	8.0	7.37	9.46	.865	...
M	29.7630	29.7474	29.7554	29.7565	38.40	46.91	41.25	42.36	— 2.68	.205	.225	.217	.216	86	67	80	77					8.12	10.68	4.90		7.10	1.383	2.0

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR OCTOBER, 1868.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....30.158 at 10 a.m. on 23rd. } Monthly range=
Lowest Barometer.....29.152 at mid. on 7th. } 1.006 inches.

Self-registering Ther.
- Maximum Temperature .....67°6 on 7th. } Monthly range=
- Minimum Temperature .....24°0 on 23rd. } 43°6.
- Mean Maximum Temperature .....49°79. } Mean daily range=
- Mean Minimum Temperature .....36°23. } 13°56.
- Greatest daily range.....22°2 from a.m. to p.m. of 15th.
- Least daily range ..... 1°6 from a.m. to p.m. of 21st.

Warmest day..... 7th...Mean Temperature.....59°53. } Difference=28°88.
Coldest day .....23rd...Mean Temperature.....30°65. }

Maximum Radiation.
- Solar .....76°0 on 12th. } Monthly range=
- Terrestrial .....10°2 on 18th. } 65°8.

Aurora observed on 5 nights, viz.: 16th, 17th, 19th, 22nd and 23rd.
Possible to see Aurora on 14 nights; impossible on 17 nights.
Snow on 2 days; depth 2.0 inches; duration of fall 9.8 hours.
Raining on 10 days; depth 1.365 inches; duration of fall 42.5 hours.
Mean of Cloudiness=0.63.
Most cloudy hour observed 2 p.m.; Mean=0.70; least cloudy hour observed 6 a.m.; Mean=0.56.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1463.88	1440.51	1401.29	2344.12

Resultant Direction N. 89° W.; Resultant Velocity 1.27.
Mean Velocity 7.10 miles per hour.
Maximum Velocity 25.8 miles, from 5 to 6 a.m. of 8th.

Most Windy day 30th; Mean Velocity 14.29 miles per hour. } Difference 12.34 miles.
Least Windy day 23rd; Mean Velocity 1.95 miles per hour. }

Most Windy hour 2 p.m.; Mean Velocity 10.95 miles per hour. } Difference 6.03 miles.
Least Windy hour 10 p.m.; Mean Velocity 4.92 miles per hour. }

14th. Thin ice. 22nd. First measurable snow of season.
27th. Sheet lightning, thunder at 11 p.m.
29th. Solar halo. Lunar halo on 26th.
Fog recorded on the 14th, 15th and 27th.

COMPARATIVE TABLE FOR OCTOBER.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Vel'y	Mean Velocity.
	°	°	°	°	°					°		
1840	44.4	— 1.5	73.0	23.0	50.0	13	1.860	3	...	...	...	...
1841	41.6	— 4.3	59.7	20.6	39.1	6	1.360	2	...	...	...	0.41 lbs
1842	45.1	— 0.8	68.6	27.5	41.1	8	5.175	0	...	...	...	0.35
1843	41.8	— 4.1	68.0	24.2	43.8	12	3.790	4	2.5	...	...	0.54
1844	43.3	— 2.6	71.6	15.9	55.7	7	imper.	4	12.0	...	...	0.43
1845	46.4	+ 0.5	64.0	19.7	44.3	11	1.760	1	inap.	...	...	0.26
1846	44.6	— 1.3	70.1	20.7	49.4	14	4.180	2	inap.	...	...	0.44
1847	44.0	— 1.9	64.6	20.4	44.2	13	4.390	2	inap.	...	...	0.19
1848	46.3	+ 0.4	61.8	24.5	37.3	11	1.550	0	...	N 54 W	1.24	4.60 m.
1849	45.3	— 0.6	68.9	24.2	34.7	13	5.965	1	inap.	N 12 W	1.27	7.76
1850	45.4	— 0.5	66.7	22.4	44.3	10	2.085	0	...	N 66 W	1.10	5.30
1851	47.4	+ 1.5	66.2	25.2	41.0	10	1.680	2	0.3	S 72 W	1.06	4.39
1852	48.0	+ 2.1	70.7	23.8	46.9	12	5.280	0	...	N 5 E	1.19	4.47
1853	44.4	— 1.5	64.7	23.4	41.3	10	0.875	2	inap.	S 88 W	1.74	4.77
1854	49.5	+ 3.6	76.4	26.4	49.0	15	1.495	3	inap.	N 45 W	1.52	4.57
1855	45.4	— 0.5	68.0	22.6	45.4	14	2.485	5	0.8	N 82 W	4.91	9.88
1856	45.3	— 0.6	71.4	23.0	48.4	10	0.875	2	0.1	N 76 W	2.15	6.07
1857	45.4	— 0.5	64.0	26.5	37.5	10	1.040	2	0.2	N 19 W	2.93	6.24
1858	48.8	+ 2.9	76.3	31.5	44.8	17	1.797	1	inap.	N 34 W	0.36	5.96
1859	43.0	— 2.9	69.8	22.3	47.5	11	0.940	4	inap.	N 68 W	5.04	8.12
1860	47.3	+ 1.4	68.0	28.4	39.6	15	1.618	1	inap.	N 9 W	2.00	6.93
1861	48.7	+ 2.8	71.0	29.0	42.0	15	1.993	1	inap.	N 61 W	1.06	5.96
1862	48.7	+ 2.8	76.6	26.2	50.4	19	2.684	2	0.5	N 78 W	2.89	6.53
1863	45.9	0.0	66.4	30.5	35.9	16	2.522	0	...	S 71 W	0.48	6.16
1864	45.2	— 0.7	67.0	28.0	39.0	22	3.321	1	inap.	N 60 W	3.17	6.66
1865	44.5	— 1.4	71.4	21.6	49.8	17	2.705	3	4.5	N 36 W	3.55	7.26
1866	49.1	+ 3.2	71.0	31.8	39.2	11	2.470	1	inap.	N 30 W	0.84	5.53
1867	49.9	+ 4.0	75.4	31.0	44.4	11	1.970	0	...	N 45 W	1.51	5.73
1868	42.4	— 3.5	67.6	24.0	43.6	10	1.365	2	2.0	N 89 W	1.27	7.10
Results to 1867.	45.88	...	61.95	22.40	39.55	12.61	2.514	1.75	0.84	N 56 W	1.75	5.99
Excess for 1868.	— 3.52	...	+ 5.65	+ 1.60	+ 4.05	— 2.61	— 1.149	+ 0.25	+ 1.16	...	...	+ 1.11

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—NOVEMBER, 1868.

Latitude—43° 39′4 *North.* *Longitude*—5*h.* 17*m.* 33*s. West.* *Elevation above Lake Ontario,* 108 *feet.*

Day.	Barom. at temp. of 32°. 6 A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 PM	M'N.	Excess of Mean above Normal.	Tension of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N.	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Direction of Wind. 6 A.M.	2 P.M.	10 P.M	Resultant.	Velocity of Wind. 6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN	Rain in Inches.	Snow in Inches.
					°	°	°	°	°												°							
1	29.424	29.519	—	—	39.2	38.8	—	—	—	.190	.157	—	—	79	74	—	—	W	N W b N	N W b W	N 37 W	9.0	19.5	9.5	13.40	14.03	Inap.	Inap.
2	.816	.834	29.814	29.8220	32.7	36.0	27.3	32.23	— 8.03	.157	.144	.126	.139	84	68	84	77	N N W	N W	Calm.	N 28 W	7.4	9.8	0.0	3.51	3.57	...	...
3	.729	.646	.496	.5990	24.8	43.5	34.2	34.88	— 5.12	.112	.240	.177	.174	84	85	89	83	Calm.	S b E	Calm.	S 11 E	0.0	8.2	0.0	3.17	3.41	...	...
4	.576	.484	.360	.4695	34.9	45.0	42.1	40.72	+ 0.95	.167	.211	.249	.217	83	70	93	85	S b E	E N E	N W b N	N 59 E	4.2	6.8	8.8	4.01	5.89	.260	...
5	.428	.517	.720	.5783	40.7	43.9	37.4	40.23	+ 0.75	.231	.240	.162	.210	91	83	72	83	N W b N	N b W	W	N 76 W	3.3	10.8	18.6	14.40	14.82	.015	...
6	.915	.963	30.012	.9740	31.6	36.7	31.6	35.18	— 5.98	.148	.144	.148	.146	83	65	83	77	W N W	W N W	W b N	N 72 W	17.0	9.2	0.8	5.53	6.09	...	...
7	30.042	.978	29.853	.9530	29.8	36.7	39.2	35.25	— 3.75	.147	.179	.190	.171	88	82	79	82	N E b N	E	E b N	N 82 E	5.0	13.2	17.0	11.91	12.20	.190	Inap.
8	29.698	.632	—	—	40.3	44.6	—	—	—	.236	.278	—	—	95	94	—	—	E	E	E b N	N 81 E	5.4	1.0	3.5	2.61	2.63	.600	...
9	.619	.681	.694	.6747	39.6	42.1	40.7	40.62	+ 2.22	.227	.223	.250	.233	94	83	98	92	N E b E	N N E	E N E	N 64 E	3.0	4.8	7.2	8.27	9.25	1.210	...
10	.493	.499	.571	.5230	38.5	39.9	39.2	38.95	+ 0.87	.225	.234	.190	.212	96	95	79	89	E	E	W S W	S 51 E	17.6	8.4	7.2	2.48	9.50	.030	...
11	.578	.540	.659	.6037	35.2	36.7	30.9	34.10	— 3.68	.139	.118	.112	.127	68	53	64	64	W S W	W S W	W b S	S 67 W	12.2	17.0	12.5	12.78	12.87	...	Inap.
12	.874	.984	.886	.9175	30.2	35.6	28.1	34.70	— 2.80	.149	.177	.187	.168	89	85	81	84	W b N	S W b W	S	S 47 W	2.0	8.6	6.8	6.29	7.00	...	...
13	.836	.836	.897	.8627	37.8	48.2	36.0	41.06	+ 3.90	.190	.236	.180	.190	84	69	85	74	S W b W	S b W	W b S	S 68 W	8.2	6.8	5.0	5.55	5.83	...	...
14	.930	.917	.936	.9348	31.1	43.9	36.9	37.43	+ 0.53	.154	.189	.188	.178	88	66	86	79	Calm.	E S E	E N E	N 84 E	0.0	4.6	4.5	4.69	5.09	...	...
15	.900	.990	—	—	32.4	35.6	—	—	—	.161	.186	—	—	87	89	—	—	N E b E	E N E	N E	N 51 E	5.8	6.5	7.7	8.45	8.56	...	...
16	30.038	.932	.822	.9207	26.2	35.8	35.3	32.17	— 4.03	.116	.152	.164	.147	82	78	80	80	N E	E b N	E b N	N 80 E	11.5	18.0	18.0	16.65	16.96	.005	...
17	29.644	.438	.363	.4677	38.1	41.7	41.7	40.88	+ 5.08	.195	.255	.255	.239	85	96	96	92	E b N	E	E b S	S 84 E	16.5	14.8	13.4	9.33	13.16	2.230	...
18	.418	.426	.489	.4533	34.5	38.1	37.4	36.55	+ 1.07	.192	.161	.196	.185	96	69	87	85	W	S E b E	Calm.	S 43 E	1.0	5.6	0.0	1.40	2.63	.075	Inap.
19	.498	.477	.490	.4920	34.2	38.9	34.2	35.52	+ 0.43	.177	.151	.160	.162	89	63	81	78	N N W	W b N	W b N	N 55 W	1.0	6.4	4.2	2.37	2.67	Inap.	1.2
20	.488	.522	.598	.5470	32.7	36.3	34.5	34.05	— 0.72	.172	.168	.163	.166	92	78	82	85	N b W	N b W	N b W	N 7 W	2.0	4.8	4.6	4.69	4.88	...	1.0
21	.637	.560	.602	.6010	32.7	36.3	33.4	33.97	— 0.42	.172	.168	.171	.170	92	78	89	87	N W	N W b W	N N W	N 33 W	8.0	17.0	15.0	15.80	15.96	...	Inap.
22	.662	.738	—	—	28.4	36.0	—	—	—	.134	.119	—	—	87	56	—	—	N N W	N W	Calm.	N 34 W	13.7	13.2	0.0	9.66	9.74	...	...
23	.830	.782	.756	.7860	30.6	46.1	36.3	37.67	+ 4.00	.144	.170	.150	.155	85	54	70	69	N W	W b S	S W b W	S 74 W	4.0	4.0	7.6	7.67	8.38	...	...
24	.784	.776	.814	.8003	32.7	44.3	33.8	36.98	+ 3.72	.165	.167	.173	.167	88	56	89	77	Calm.	W N W	W b N	N 82 W	0.0	9.5	2.5	5.90	6.00	...	...
25	.712	.477	.313	.4900	34.5	41.7	42.5	39.82	+ 6.85	.173	.210	.236	.210	86	79	86	85	N W b W	E S E	S	S 50 E	1.2	6.2	9.4	3.23	4.46	.480	...
26	.239	.400	.619	.4378	41.0	39.4	35.6	38.53	+ 5.97	.246	.136	.142	.173	95	56	68	73	S W	W N W	W b S	N 71 W	2.0	20.8	6.2	11.42	11.98	Inap.	Inap.
27	.756	.748	.672	.7225	33.4	35.2	29.8	32.66	+ 0.50	.149	.135	.133	.141	78	66	80	76	N W	W b S	Calm.	S 83 W	6.6	6.6	0.0	2.08	2.62	...	...
28	.435	.263	.332	.3577	35.8	41.0	35.3	37.37	+ 5.48	.189	.192	.189	.192	92	75	92	86	S S W	S S W	N W b W	S 63 W	2.8	11.8	12.4	7.07	9.69	.055	...
29	.447	.357	—	—	34.9	32.4	—	—	—	.159	.161	—	—	78	87	—	—	W b N	S W	N	N 56 W	17.6	7.8	5.9	3.56	7.15	...	2.0
30	.165	.247	.334	.2615	30.6	21.9	20.5	24.27	— 6.82	.152	.089	.093	.111	89	77	85	84	N b E	N W b N	N N W	N 18 W	8.0	13.0	0.8	7.65	7.77	...	0.1
M	29.6592	29.6371	29.6441	29.6490	33.74	39.82	35.35	36.15	0.00	.172	.180	.175	.175	87	73	84	81	.....	.....	.....	.....	6.53	9.82	6.97	...	8.16	5.150	4.3

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR NOVEMBER, 1868.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 30.068 at 8 a. m. on 7th. } Monthly range—
Lowest Barometer . . . . . 29.165 at 6 a. m. on 30th. } 0.903.

Self-registering Ther.
- Maximum temperature . . . . . 50°5 on 13th. } Monthly range—
- Minimum temperature . . . . . 20°1 on 30th. } 30°4
- Mean maximum temperature . . . . . 41°39 } Mean daily range—
- Mean minimum temperature . . . . . 31°70 } 9°69
- Greatest daily range . . . . . 23°2 from a.m. to p.m. of 3rd.
- Least daily range . . . . . 3°0 from a.m. to p.m. of 26th.

Warmest day . . . . 13th...Mean temperature . . . 41°08 } Difference—16°81.
Coldest day . . . . 30th...Mean temperature . . . 24°27 }

Maximum Radiation
- Solar . . . . . 67°0 on 3rd } Monthly range—51°8
- Terrestrial . . . . . 15°2 on 23rd }

Aurora observed on 1 night, viz.: 19th.
Possible to see aurora on 12 nights; impossible on 18 nights.
Snowing on 10 days; depth, 4.3 inches; duration of fall, 27.9 hours.
Raining on 14 days; depth, 5.150 inches; duration of fall, 106.8 hours.
Mean of cloudiness—0.78.
Most cloudy hour observed, 6 a.m.; mean, 0.81; least cloudy hour observed, 2 p.m.; mean, 0.73.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South	East.	West.
2015.45	785.17	1828.45	2704.64

Resultant direction, N. 35° W.; Resultant velocity, 2.10.
Mean velocity, 8.16 miles per hour.
Maximum velocity, 25.4 miles, from noon to 1 p.m. of 26th.
Most windy day, 16th; mean velocity, 16.96 miles per hour. } Difference, 14.34 miles.
Least windy day, 27th; mean velocity, 2.62 miles per hour. }
Most windy hour, noon; mean velocity, 10.96 miles per hour } Difference, 4.41 miles.
Least windy hour, 5 p.m.; mean velocity, 6.55 miles per hour }

9th. Heavy rain storm from 4 p.m.
17th. Heavy rain storm all day.
24th. Lunar halo.
13th. Splendid display of periodic meteors from 10.45 p.m. to 5.45 a.m. of 14th. 2886 were observed, many of them of considerable magnitude and great brightness.

COMPARATIVE TABLE FOR NOVEMBER.

YEAR.	TEMPERATURE. Mean.	Excess above Average.	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	V'locity.	Mean Velocity.
	°	°	°	°	°					°		
1840	35.9	— 1.0	56.8	14.6	42.2	5	1.220	8	...	...	...	...
1841	35.0	— 1.9	63.8	8.5	55.3	8	2.450	5	...	...	...	0.91 lbs
1842	33.3	— 3.4	56.8	8.1	48.7	9	5.310	10	...	...	...	1.22
1843	33.5	— 3.4	52.6	14.1	38.5	10	4.765	7	1.2	...	...	0.59
1844	34.9	— 2.0	56.0	12.1	43.9	8	Imp.	4	8.0	...	...	0.48
1845	36.8	— 0.1	59.5	8.1	51.4	7	1.105	4	5.0	...	...	0.53
1846	41.3	+ 4.4	56.6	18.0	37.6	12	5.805	2	0.4	...	...	0.64
1847	38.6	+ 1.7	57.9	8.7	49.2	14	3.155	3	Inap.	...	...	0.36
1848	34.5	— 2.4	49.0	15.9	33.1	9	2.020	3	1.4	N 81 W	1.81	4.81 m.
1849	42.6	+ 5.7	56.4	26.5	29.9	10	2.815	2	1.0	N 39 W	1.55	4.78
1850	38.8	+ 1.9	62.8	11.0	51.8	7	2.955	1	Inap	N 42 W	1.43	5.27
1851	32.9	— 4.0	50.2	13.8	36.4	5	3.885	6	6.7	N 50 W	1.25	4.70
1852	36.0	— 0.9	50.4	18.2	32.2	7	1.775	3	2.0	N 59 W	1.53	6.50
1853	38.7	+ 1.8	55.6	12.8	42.8	15	2.425	6	2.7	N 9 W	0.55	5.52
1854	36.8	— 0.1	55.4	13.8	41.6	13	1.115	4	1.3	W	3.44	7.54
1855	38.6	+ 1.7	59.2	15.5	43.7	8	4.590	6	3.0	N 66 W	3.18	10.81
1856	37.4	+ 0.5	56.4	18.8	37.6	10	1.375	9	9.5	S 85 W	2.95	8.75
1857	33.5	— 3.4	58.2	—3.5	61.7	14	3.235	9	6.9	S 61 W	5.45	9.25
1858	34.2	— 2.7	53.0	15.3	37.7	12	3.879	13	4.0	N 25 W	3.14	8.87
1859	38.9	+ 2.0	62.6	21.8	40.8	12	5.193	9	0.6	N 81 W	3.39	9.65
1860	37.9	+ 1.0	64.5	13.2	51.3	12	2.569	8	1.9	S 89 W	4.96	11.02
1861	37.1	+ 0.2	52.4	23.0	29.4	14	4.294	8	3.2	N 46 W	1.94	7.44
1862	35.6	— 1.3	58.0	16.2	41.8	11	2.205	11	5.3	N 46 W	3.00	6.60
1863	39.1	+ 2.2	67.0	17.8	49.2	13	3.656	6	0.1	N 88 W	3.50	7.86
1864	36.9	0.0	60.2	21.0	39.2	11	3.765	8	4.5	S 72 W	3.82	7.64
1865	38.6	+ 1.7	63.2	23.6	39.6	5	0.975	7	1.1	N 79 W	2.98	7.90
1866	38.4	+ 1.5	54.2	21.8	32.4	13	2.963	4	2.2	N 88 W	3.06	6.96
1867	36.9	0.0	60.4	9.6	50.8	8	1.835	9	0.9	N 87 W	4.02	7.76
1868	36.2	— 0.7	50.5	20.1	30.4	14	5.150	10	4.3	N 35 W	2.10	8.16
Results to 1867.	36.88	.....	57.43	14.94	42.59	10.07	3.012	6.25	2.92	N 79 W	2.57	7.48
Excess for 1868	—0.73	.....	—6.93	+5.16	— 12.09	+ 3.93	+ 2.138	+ 3.75	+ 1.38	...	...	+ 0.68

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—DECEMBER, 1868.

Latitude—43° 39′4 *North. Longitude*—5h. 17m. 33s. *West. Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°				Temp. of the Air.				Excess of Mean above Normal	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 PM	MN'N		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'.	M'N.		
					°	°	°	°	°																			
1	29.365	29.400	29.505	29.4320	18.3	22.3	17.2	19.38	—11.40	.067	.885	.075	.083	87	71	78	79	N N W	N W.	W	N 54 W	5.8	13.6	4.8	7.79	8.57	...	Inap.
2	.599	.713	.858	.7427	19.0	23.7	23.9	21.98	— 8.50	.091	.098	.109	.099	89	77	85	83	W N W	W b N	Calm.	N 60 W	13.5	9.0	0.0	4.14	4.33	...	Inap.
3	.948	30.006	30.008	.9057	25.5	31.6	30.6	29.18	— 0.90	.126	.140	.144	.134	91	78	85	84	Calm.	W N W	N W b N	N 50 W	0.0	8.5	1.5	3.83	4.16	...	...
4	.926	29.738	29.576	.7293	26.6	26.6	23.0	25.88	— 3.90	.126	.126	.113	.127	87	87	92	90	N b E	N b N	N N E	N 55 E	6.4	11.5	17.5	11.96	13.00	...	4.0
5	.631	.593	.758	.6407	28.0	27.8	26.6	25.75	— 3.62	.113	.133	.126	.124	92	89	87	89	N N E	N N b N	N N b N	N 33 E	11.8	5.0	0.8	5.21	5.22	...	3.5
6	.808	.798	—	—	27.7	29.1	—	—	—	.142	.141	—	—	89	87	—	—	N N b N	E N E	S E b E	S 84 E	0.4	6.5	13.0	7.97	8.71	...	...
7	.358	.041	28.856	.0530	29.1	32.7	26.2	29.72	+ 1.05	.148	.180	.131	.157	92	97	92	95	N E b E	E b S	N W	N 74 E	10.8	12.8	9.6	2.86	12.50	...	3.0
8	28.906	28.967	29.223	.0618	25.9	28.0	21.2	24.18	— 4.28	.120	.103	.072	.094	86	66	63	71	W b N	W N W	W N W	N 70 W	16.0	21.8	21.0	17.93	18.26	...	...
9	29.449	29.563	.549	.5282	18.3	19.4	16.5	17.77	—10.38	.081	.074	.076	.076	81	70	83	78	W	N W b W	W S W	S 86 W	13.0	5.5	12.2	9.80	10.88	...	0.1
10	.568	.549	.590	.5707	12.2	17.6	8.5	12.82	—15.02	.065	.064	.048	.058	86	65	75	74	W	W S W	W b S	S 76 W	9.0	13.2	8.5	9.39	9.48	...	...
11	.541	.507	.489	.5153	5.3	20.5	16.5	13.68	—13.97	.052	.074	.076	.067	92	67	83	82	W b S	W	W S W	S 88 W	6.5	15.5	10.2	9.23	9.27	...	Inap.
12	.642	.769	.923	.7955	18.6	23.3	14.7	18.47	— 8.88	.090	.103	.072	.087	90	82	85	86	W	W b S	W b S	S 79 W	13.0	14.2	14.0	14.96	15.04	...	...
13	30.027	.949	—	—	13.2	20.1	—	—	—	.071	.059	—	—	90	55	—	—	W	W b S	Calm.	S 78 W	10.5	6.4	0.0	5.51	5.62	...	...
14	29.651	.411	.517	.5302	22.3	30.6	27.3	26.37	— 0.60	.107	.138	.133	.124	89	90	89	86	W S W	S W	W b S	S 85 W	7.0	12.5	8.8	6.27	7.50	...	0.4
15	.805	.868	.767	.8162	26.2	28.0	28.4	27.23	+ 0.47	.124	.131	.148	.132	87	86	95	89	N N W	S b E	S S E	N 63 E	9.0	1.2	9.0	1.97	4.36	...	...
16	.844	.356	.216	.3496	21.2	29.8	24.8	25.63	+ 0.93	.099	.125	.120	.116	87	75	90	83	N E b E	N E b N	N b E	S 78 W	6.0	1.0	4.0	1.11	6.27	...	...
17	28.906	28.937	.063	28.9858	33.4	37.1	34.5	34.77	+ 8.40	.163	.158	.148	.153	85	71	75	76	S W b W	W b S	W N W	N 80 W	12.2	13.5	14.0	12.36	14.04	...	Inap.
18	29.383	29.638	.881	29.6733	27.0	26.2	13.2	20.45	— 5.72	.129	.116	.071	.096	88	82	90	85	N W b N	N W b N	N W b W	N 32 W	12.0	15.8	4.6	9.18	9.66	...	Inap.
19	30.606	.944	.711	.8655	5.0	21.2	28.0	18.42	— 7.65	.049	.099	.131	.092	90	86	86	85	N N E	E S E	E b S	S 85 E	11.0	18.4	19.2	13.15	14.49	...	0.1
20	29.365	.224	—	—	35.3	42.1	—	—	—	.170	.162	—	—	83	59	—	—	E b S	W b N	W S W	S 57 W	9.6	18.4	12.4	8.24	10.27	0.005	...
21	.300	.435	.590	.4667	34.2	34.5	29.8	32.28	+ 6.50	.177	.149	.147	.161	89	73	88	87	S W b W	W b S	W b S	S 81 W	11.8	11.0	16.0	13.17	13.39	...	0.2
22	.675	.668	.558	.6278	27.7	29.5	25.5	27.88	+ 1.70	.135	.106	.125	.124	89	65	91	84	W S W	W b S	Calm.	N 86 W	11.6	14.0	0.0	6.80	8.16	...	0.5
23	.613	.724	.807	.7268	16.5	15.4	6.7	11.46	—14.08	.076	.059	.047	.059	83	66	78	77	N W b N	N W	N N W	N 32 W	18.6	15.0	14.2	13.21	13.63	...	0.2
24	.806	.738	.623	.7208	—0.8	6.7	14.7	6.98	—18.50	.040	.041	.072	.052	94	68	85	83	N N W	N W b N	S W b W	N 78 W	15.2	10.8	10.2	8.27	11.00	...	...
25	.393	.359	—	—	16.1	22.3	—	—	—	.074	.094	—	—	83	78	—	—	S W b W	S W b W	N	N 86 W	19.0	20.5	8.9	8.19	13.33	...	0.5
26	.551	.935	.904	.9060	10.7	16.5	23.7	17.03	— 8.27	.059	.076	.105	.080	82	83	82	82	N	E b N	S E	N 86 E	3.6	9.0	10.0	5.75	7.19	...	0.1
27	.779	.604	—	—	27.0	32.0	—	—	—	.129	.158	—	—	88	87	—	—	S E	S W	S W	S 44 W	10.4	12.0	13.0	9.83	11.71	...	2.5
28	.822	.900	.820	.8457	27.0	27.7	27.0	27.38	+ 2.28	.136	.092	.121	.118	93	60	82	79	W b S	W S W	S W b W	S 51 W	9.5	8.6	1.4	6.32	7.30	...	0.4
29	.502	.620	.896	.6682	33.4	32.4	24.1	29.55	+ 4.38	.178	.124	.100	.132	93	67	77	79	S W	W	N W b N	N 58 W	8.4	17.0	8.6	9.21	11.54	...	...
30	30.005	.899	.843	.9183	14.0	22.3	18.3	17.77	— 7.40	.068	.102	.087	.083	83	85	87	84	N	N E b E	N E	N 34 E	8.2	6.2	2.2	5.09	5.37	...	...
31	29.869	.915	.946	.9172	17.6	29.5	24.4	23.48	— 1.70	.068	.136	.110	.109	91	83	84	85	N E	N b W	N b E	N 46 E	3.2	5.8	13.0	8.15	9.53	...	...
M	29.5986	29.6087	29.6345	29.6194	20.66	24.48	22.13	22.50	— 4.59	.105	.109	.104	.106	88	76	84	83	.....	.....	.....	.....	9.77	11.26	9.12	...	9.80	0.005	15.5

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR DECEMBER, 1868.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....30.027 at 6 a.m. on 13th } Monthly range=
Lowest Barometer.....28.824 at midnight on 7th } 1.203 inches.

Self-registering Ther.
- Maximum Temperature .....44°2 on 20th } Monthly range=
- Minimum Temperature.....—3°2 on 24th } 47°.4
- Mean Maximum Temperature .....29°07 } Mean daily range=
- Mean Minimum Temperature .....17°07 } 12°.00
- Greatest daily range.....32°7 from a.m. to p.m. of 19th.
- Least daily range ..... 3°6 from a.m. to p.m. of 21st.

Warmest Day.....17th...Mean Temperature.....34°77 } Difference=27°.79
Coldest Day.....24th...Mean Temperature..... 6°98 }

Maximum Radiation.
- Solar .....56°2 on 20th } Monthly range=
- Terrestrial.....—9°5 on 24th } 65°.7

Aurora observed on 4 nights, viz.:—10th, 12th, 16th and 17th.
Possible to see Aurora on 11 nights; impossible on 20 nights.
Snowing on 18 days; depth 15.5 inches; duration of fall 108.6 hours.
Raining on 1 day; depth 0.005 inches; duration of fall 0.5 hours.
Mean of Cloudiness=0.75.
Most cloudy hour observed 2 p.m.; Mean 0.83; least cloudy hour observed 6 a.m.; Mean 0.67.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
2191.86	2131.67	1472.31	4331.95

Resultant Direction N. 71° W.; Resultant Velocity 4.05.
Mean Velocity 9.80 miles per hour.
Maximum Velocity 28.0 miles, from 8 to 9 p.m. of 8th.
Most Windy day 8th; Mean Velocity 18.26 miles per hour. } Difference 14.10 miles.
Least Windy day 3rd; Mean Velocity 4.16 miles per hour. }
Most Windy hour 1 p.m.; Mean Velocity 11.85 miles per hour. } Difference 3.12 miles.
Least Windy hour 8 p.m.; Mean Velocity 8.73 miles per hour. }
23rd. Perfect solar halo. 28th. Lunar halo.
31st. Lunar halo.
11th. Bay frozen.

COMPARATIVE TABLE FOR DECEMBER.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velo'y	Mean Velocity
	°	°	°	°	°					°		
1840	24.3	— 1.7	42.1	— 8.6	50.7	3	inap	18	...	...	...	...
1841	28.7	+ 2.7	46.1	3.1	43.0	7	6.600	5	...	...	...	1.33 lbs
1842	24.7	— 1.3	40.5	3.2	37.3	3	0.880	17	...	...	...	0.61
1843	30.0	+ 4.0	48.5	3.1	45.4	6	1.040	8	8.1	...	...	0.53
1844	28.2	+ 2.2	48.5	1.6	46.9	6	imp.	6	4.2	...	...	0.40
1845	21.1	— 4.9	39.7	— 2.4	42.1	2	inap.	12	4.7	...	...	0.70
1846	27.5	+ 1.5	49.2	3.9	45.3	5	1.215	9	6.0	...	...	0.57
1847	30.1	+ 4.1	49.6	0.3	49.3	7	1.185	8	6.8	...	...	0.35
1848	29.1	+ 3.1	48.8	1.1	47.7	7	2.750	7	16.5	S 83 W	1.12	5.44mls
1849	26.5	+ 0.5	40.8	— 6.5	47.3	5	0.840	12	9.6	N 82 W	2.56	6.23
1850	21.7	— 4.3	48.8	— 9.0	57.8	2	0.190	18	29.5	N 44 W	2.93	7.40
1851	21.5	— 4.5	44.0	—14.8	58.8	6	1.075	15	10.7	N 82 W	4.00	7.37
1852	31.9	+ 5.9	51.0	13.2	37.8	7	3.995	10	20.1	S 69 W	1.03	6.54
1853	25.3	— 0.7	46.4	— 8.4	54.8	4	0.625	13	22.3	N 35 W	2.39	4.98
1854	21.9	— 4.1	44.8	— 7.0	51.8	5	0.590	12	17.2	N 44 W	4.80	8.56
1855	26.8	+ 0.8	47.0	— 5.2	52.2	6	1.845	10	29.5	S 88 W	5.29	11.38
1856	22.9	— 3.1	42.2	— 9.1	51.3	6	1.790	20	16.3	S 87 W	4.62	11.56
1857	31.9	+ 5.9	46.0	4.7	41.3	7	3.205	14	9.0	N 89 W	2.50	6.84
1858	27.4	+ 1.4	45.4	4.2	41.2	11	1.657	18	10.4	N 78 W	1.66	9.36
1859	17.9	— 8.1	54.8	— 6.0	60.8	3	1.035	23	37.4	N 53 W	4.29	10.77
1860	24.0	— 2.0	39.0	— 7.0	46.0	3	1.362	21	13.5	N 62 W	4.66	10.14
1861	31.1	+ 5.1	55.2	5.5	49.7	6	0.560	8	6.8	N 72 W	3.50	7.96
1862	28.8	+ 2.8	50.1	— 3.4	53.5	5	1.945	8	10.4	N 73 W	3.17	7.58
1863	27.0	+ 1.0	53.4	— 1.5	54.9	10	2.960	17	7.1	N 41 W	1.61	9.40
1864	24.7	— 1.3	50.4	—10.4	60.8	9	2.045	18	27.1	S 82 W	4.94	9.98
1865	27.7	+ 1.7	54.2	5.7	48.5	7	1.727	11	5.2	S 81 W	3.07	7.33
1866	25.1	— 0.9	51.0	— 5.0	56.0	7	2.790	13	15.5	S 88 W	4.98	9.91
1867	21.6	— 4.4	49.5	—12.8	62.3	7	1.408	21	13.6	S 81 W	4.82	10.32
1868	22.5	— 3.5	44.2	— 3.2	47.4	1	0.005	18	15.5	N 71 W	4.05	9.80
Result to 1867.	26.05	...	47.39	—2.41	49.80	5.79	1.678	13.29	14.30	N 76 W	3.09	8.45
Excess for '68	— 3.55	...	— 3.19	— 0.79	— 2.40	— 4.79	— 1.673	+ 4.71	+ 1.20	...	...	+ 1.35

GENERAL METEOROLOGICAL REGISTER

FOR THE YEAR 1868.

GENERAL METEOROLOGICAL

MAGNETICAL OBSERVATORY,

Latitude 45° 30′ 4″ North. Longitude 5h. 17m. 33s. West. Elevation above

	JAN.	FEB.	MAR.	APR.	MAY.	JUNE.	JULY.
	°	°	°	°	°	°	°
Mean temperature	19·02	17·18	31·30	38·04	51·82	61·99	75·80
Difference from average (28 years)...	— 4·06	— 5·98	+ 1·50	— 3·05	+ 0·42	+ 0·47	+ 8·72
Thermic anomaly (lat. 43° 40′)	—13·78	—17·53	— 8·80	—12·16	— 6·28	— 2·61	+ 7·10
Highest temperature	39·0	45·0	59·0	64·0	73·0	84·2	93·4
Lowest temperature	— 7·0	— 11·5	— 15.6	9·2	33·2	38·0	59·0
Monthly and annual ranges	46·0	56·5	74·6	54·8	39·8	46·2	34·4
Mean maximum temperature	24·10	26·57	39.10	46·13	59·72	70·60	85·40
Mean minimum temperature	11·85	8·23	23·92	29·74	44·47	53·32	66·16
Mean daily range	12·25	18·34	15·18	16·39	15·25	18·28	19·24
Greatest daily range	30·0	38·7	34·6	31·1	25·4	27·2	27·4
Mean height of the Barometer	29·5959	29·7440	29·6690	29·5872	29·5205	29·6591	29·6003
Difference from average (28 years)...	—·0509	+·1162	+·0728	—·0099	—·0531	+·0874	+·0013
Highest barometer	30·145	30·445	30·274	30·097	29·907	29·921	29·782
Lowest barometer	28·975	29·129	29·049	28·962	29·190	29·274	29·340
Monthly and annual ranges	1·170	1·316	1·225	1·135	0·717	0·647	0·442
Mean humidity of the air	82	81	74	71	75	74	69
Mean elasticity of aqueous vapour	0·092	0·086	0·140	0·170	0·299	0·422	0·619
Mean of cloudiness	0·77	0·66	0·58	0·62	0·67	0·51	0·59
Difference from average (15 years)...	+ ·05	— ·06	— ·04	+ ·02	+ ·13	— ·01	+ ·11
Resultant direction of the wind	S 83 W	N 69 W	N 21 W	N 63 W	N 38 E	N 16 E	S 87 E
" Velocity of the wind	3·97	3·23	2·12	2·43	3·16	0·85	0·72
Mean velocity (miles per hour)	8·90	10·84	8·58	9·24	6·87	5·26	4·66
Difference from average (20 years)...	+ 0·80	+ 2·42	— 0·23	+ 1·18	+ 0·11	+ 0·12	— 0·31
Total amount of rain	Inapp.	0·040	2·660	0·990	7·670	2·217	0·510
Difference from average (27–28 years)	—1·219	—0·959	+1·069	—1·461	+4·449	—0·543	—2·943
Number of days rain	2	1	7	7	16	11	5
Total amount of snow	14·6	32·8	4·2	5.3	...	...	...
Difference from average (25 years)...	— 1·41	+15·03	— 6·19	+ 2·82	— 0·06	...	...
Number of days snow	21	16	5	10	...	...	...
Number of fair days	10	12	19	14	15	19	26
Number of auroras observed	1	3	10	6	5	4	4
Possible to see aurora (No. of nights)...	10	15	18	20	17	19	18
Number of thunderstorms	...	...	1	...	4	4	5

REGISTER FOR THE YEAR 1868.

TORONTO, ONTARIO.

Lake Ontario, 106 feet. Approximate elevation above the Sea, 342 feet.

Aug.	Sept.	Oct.	Nov.	Dec.	Year 1868.	Year 1867.	Year 1866.	Year 1865.	Year 1864.	Year 1863.	Year 1862.
°	°	°	°	°	°	°	°	°	°	°	°
67·18	58·60	42·36	36·15	22·50	43·33	43·84	43·51	44·92	44·79	44·57	44·25
+ 1·13	− 1·38	− 3·52	− 0·73	− 3·55	− 0·33	− 0.32	− 0·65	+ 0·76	+ 0·54	+ 0·41	+ 0·19
− 1·32	− 4·90	−11·44	− 7·05	−13·50	− 7·67	− 7.16	− 7·49	− 6·08	− 6·30	− 6·43	− 6·65
84·4	75·0	67·6	50·5	44·2	93·4	95·2	94·0	90·5	94·0	88·0	95·5
46·8	36·0	24·0	20·1	− 3·2	− 15·6	− 12·8	− 14·0	− 10·0	− 15·0	− 19·8	− 5·2
37·6	39·0	43·6	30·4	47·4	109·0	108·0	108·0	100·5	109·0	107·8	100·7
76·01	64·30	49·79	41·39	29·07	...	...	...	...	...	...	...
58·17	50·12	36·23	31·70	17·07	...	...	...	...	...	...	...
18·74	14·18	13·56	9·69	12·00	15·26	15·47	14·99	15·43	14·57	14·73	14·43
33·7	26·4	22·2	23·2	32·7	38·7	31·6	40·8	36·2	37·4	39·6	37·0
29·6440	29·6599	29·7565	29·6490	29·6194	29·6421	29·6140	29·6216	29·6330	29·5596	29·6586	29·6248
+·0218	−·0025	+·1119	+·0378	−·0352	+·0248	−·0033	+ ·0048	+ ·0157	−·0577	+ ·0963	+ ·0075
29·915	29·998	30·158	30·068	30·027	30·445	30·332	30·940	30·354	30·327	30·502	30·469
29·220	29·334	29·152	29·165	28·824	28·824	28·768	28·807	28·707	28·671	28·704	28·505
0·696	0·664	1·006	0·903	1·203	1·621	1·564	2·133	1·647	1·656	1·798	1·664
70	77	77	81	88	76	74	75	75	76	77	77
0·463	0·375	0·216	0·175	0·105	0·264	0·252	0·248	0·259	0·263	0·266	0·262
0·55	0·62	0·63	0·78	0·75	0·64	0·61	0·61	0·61	0·65	0·61	0·63
+ ·07	+ ·14	+ ·02	+ ·04	+ ·01	+ ·04	+ 0·01	+ 0·01	+ 0·01	+ 0·05	+ 0·01	+ 0·03
s 58 w	N 74 w	N 89 w	N 35 w	N 71 w	N 57 w	N 60 w	N 73 w	N 66 w	N 76 w	N 41 w	N 48 w
1·01	0·88	1·27	2·10	4·05	1·47	2·05	2·83	1·98	2·49	1·34	2·03
6·15	6·68	7·10	8·16	9·80	7·69	7·00	7·41	6·78	7·40	7·13	7·33
+ 1·01	+ 1·26	+ 1·11	+ 0·68	+ 1·35	+ 0·79	+ 0·10	+ 0·51	− 0·12	+ 0·50	+ 0·23	+ 0·43
1·562	4·239	1·365	5·150	0·005	26·408	19·041	34·209	26·599	29·486	26·483	25·529
−1·460	+0·578	−1·149	+2·138	−1·673	−3·173	−10·540	+ 4·628	−2·982	−0·095	−3·098	−4·062
13	16	10	14	1	103	100	126	111	132	130	118
...	...	2.0	4·3	15·5	78·7	110·5	52·1	63·3	74·6	62·9	85·4
...	...	+ 1·16	+ 1·38	+ 1·20	+13·91	+45·71	−12·69	− 1·49	+ 9·81	− 1·89	+20·61
...	...	2	10	18	82	84	69	68	70	74	72
18	14	20	11	12	190	181	180	201	180	181	189
2	5	5	1	4	50	43	44	55	34	44	48
20	19	14	12	11	198	202	209	201	158	182	176
6	4	1	...	...	25	23	24	17	20	24	24

TEMPERATURE.

	1868.	Average of 28 years.	Extremes.	
	°	°	°	°
Mean temperature of the year	43.33	44.16	46.36 in '46.	42.16 in '56.
Warmest month	July.	July.	July, 1868.	Aug. 1860.
Mean temperature of the warmest month	75.80	67.08	75.80	64.46
Coldest month	February.	January.	Jan. 1857.	Feb. 1848.
Mean temperature of the coldest month	17.18	23.08	12.75	26.60
Difference between the temperatures of the warmest and the coldest months	58.62	44.00	...	...
Mean of deviations of monthly means from their respective averages of 28 years, signs of deviation being disregarded	2.88	2.37	3.67 in 1843.	1.33 in 1853-'64.
Months of greatest deviation, without regard to sign	July.	January.	Jan. 1857.	...
Corresponding magnitude of deviation	8.72	3.8	10.3	...
Warmest day	July 14.	...	July 14, '68.	July 31, '44.
Mean temperature of the warmest day	84.50	77.59	84.50	72.75
Coldest day	Feb. 22.	...	Feb. 6, '55. Jan. 22, '57.	Dec. 22, '42.
Mean temperature of the coldest day	-2.38	-1.29	-14.38	9.57
Date of the highest temperature	July 13.	...	Aug. 24, '54.	Aug. 19, '40.
Highest temperature	93.4	90.9	99.2	82.4
Date of the lowest temperature	March 3.	...	Jan. 26, '59.	Jan. 2, '42.
Lowest temperature	-15.6	-12.3	-26.5	1.9
Range of the year	109.0	103.2	118.2	87.0

BAROMETER.

	1868.	Average of 27 years.	Extremes.	
Mean pressure of the year	29.6421	29.6173	29.6670 in 1849.	29.5602 in 1864.
Month of highest mean pressure	October.	September	Jan. 1849.	June, 1864.
Highest mean monthly pressure	29.7565	29.6624	29.8046	29.6525
Month of lowest mean pressure	May.	June.	March, 1859.	Nov. 1849.
Lowest mean monthly pressure	29.5205	29.5717	29.4143	29.5586
Date of highest pressure in the year	Feb. 23, 9 a.m.	...	Jan. 8, '66.	Oct. 22, '45.
Highest pressure	30.445	30.383	30.940	30.242
Date of lowest pressure in the year	Dec. 7, midnig't	...	Mar. 19. '59.	Mar. 17, '45.
Lowest pressure	28.824	28.690	28.286	28.939
Range of the year	1.621	1.693	2.133 in 1866.	1.303 in 1845.

RELATIVE HUMIDITY.

	1868.	Average of 26 years.	Extremes.	
Mean humidity of the year	76	77	82 in 1851.	73 in 1858.
Month of greatest humidity	December.	January.	Jan. 1857.	Dec. 1858.
Greatest mean monthly humidity	83	83	89	81
Month of least humidity	July.	May.	Feb. 1843.	April, 1849.
Least mean monthly humidity	69	71	58	76

EXTENT OF SKY CLOUDED.

	1868.	Average of 15 years.	Extremes.	
Mean cloudiness of the year	0.64	0.60	0.65 in 1864	0.57 in 1856.
Most cloudy month	November.	November.	...	...
Greatest monthly mean of cloudiness	0.78	0.74	0.83	0.73
Least cloudy month	June.	August.	...	...
Lowest monthly mean of cloudiness	0.51	0.48	0.29	0.50

WIND.

	1868.	Average of 20 years.	Extremes.	
Resultant direction	N. 57° W.	N. 61° W.	...	...
Resultant velocity in miles	1.47	1.89	...	...
Mean velocity, without regard to direction	7.69	6.89	8.55 in 1860.	5.10 in 1853.
Month of greatest mean velocity	February.	March.	Mar. 1860.	Jan. 1848.
Greatest monthly mean velocity	10.84	8.81	12.41	5.82
Month of least mean velocity	July.	July.	August, 1852	Sept. 1860.
Least monthly mean velocity	4.66	4.97	3.30	5.79
Day of greatest mean velocity	March 21.	...	Mar. 19, '59.	Dec. 2, 1848.
Greatest daily mean velocity	28.63	22.95	31.16	15.30
Day of least mean velocity	March 9.	...	...	...
Least daily mean velocity	1.37	...	...	...
Hour of greatest absolute velocity	April 8. 2 to 3 p.m.	...	Dec. 27, '61. 9-10 a.m.	Mar. 14, '58. 11 to noon.
Greatest velocity	38.0	39.81	46.0	25.6

RAIN.

	1868.	Average of 28 years.	Extremes.	
Total depth of rain in inches	26.408	29.581	43.55 in 1843.	19.041 in 1867.
Number of days in which rain fell	103	109	136 in 1861.	66 in 1841.
Month in which the greatest depth of rain fell	May.	September	Sept. 1843.	Sept. 1848.
Greatest depth of rain in one month	7.670	3.661	9.760	3.115
Month in which the days of rain were most frequent	May, Sept.	October.	Oct. 1864.	May, 1841.
Greatest number of rainy days in one month	16	13	22	11
Day in which the greatest amount of rain fell	Nov. 17.	...	Sept. 14, '43.	Sept. 14, '48.
Greatest amount of rain in one day	2.230	2.037	3.455	1.009
Hour of heaviest rain	Sept. 8. 11 to 12 p.m	...	...	...
Greatest amount of rain in one hour	0.715	...	...	...

SNOW.

	1868.	Average of 25 years.	Extremes.	
Total depth in the year in inches	78.7	64.8	110.5 in 1867.	33.4 in 1851.
Number of days in which snow fell	82	60	87 in 1859.	33 in 1848.
Month in which the greatest depth of snow fell	February.	February.	Feb. 1846.	Dec. 1851.
Greatest depth of snow in one month	32.8	17.8	46.1	10.7
Month in which the days of snow were most frequent	January.	January.	Dec. 1859. Jan. 1861.	Feb. 1843.
Greatest number of days of snow in one month	21	13	23	8
Days in which the greatest amount of snow fell	Feb. 24.	...	Feb. 5, 1863.	Jan. 10, 1857.
Greatest fall of snow in one day	12.0	8.7	16.0	5.5

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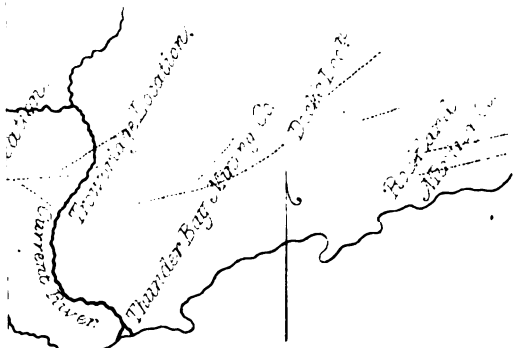

Fig. 1.
Sketch-Plan of North-west Shore of
Thunder Bay, Lake Superior.

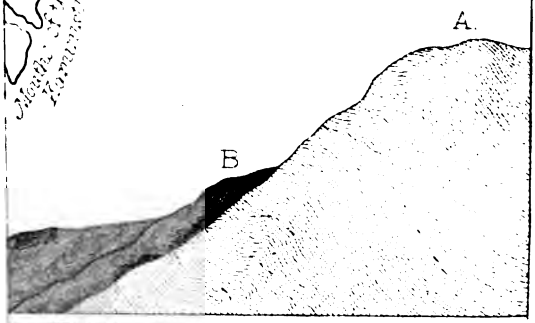

Fig 2.
Rock Formations
ore of Lake Superior.

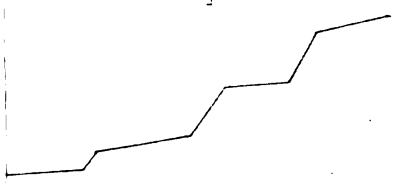

Fig 3.
utline of Thunder Cape,
n the South East.

THE CANADIAN JOURNAL.

NEW SERIES.

No. LXX. — NOVEMBER, 1869.

ANALYSES OF SOME CANADIAN MINERALS.

BY E. J. CHAPMAN, PH. D.

PROFESSOR OF MINERALOGY AND GEOLOGY IN UNIVERSITY COLLEGE, TORONTO.

1. *Graphite:* from the township of Buckingham, on the Ottawa, (lot 19, range 5).

The sample employed in this analysis was apparently very pure: soft, black, sub-foliated, and highly lustrous. Sp. gr. = 2·265. The moisture was determined by desiccation in an air-bath at a temperature of 212°. The carbon was then burnt off by prolonged ignition in the muffle of an assay-furnace; and the resulting ash was fused with carbonate of soda in a platinum vessel, and decomposed in the usual way by chlorhydric acid. 6·314 grammes lost 82 milligrammes by complete desiccation, and left 1·1731 gramme of very faintly coloured ash after exposure to long continued ignition. The analysis thus yielded:

Carbon	80·12		
Ash	18·58	Silica	12·86
		Alumina	4·33
		Fe O (from $Fe^2 O^3$)...	1·07
		Lime	0·14
		Magnesia	trace
		Loss	0·18
Moisture	1·30		

Another sample (sp. gr. = 2·272) yielded: moisture 1·14, ash 22·06, carbon (by difference, as before) 76·80. The composition of the ash was not determined.

2. *Silver Glance :* from Thunder Bay, Lake Superior.

The sample consisted of a small mass of distorted crystals (combinations of cube and octahedron), perfectly sectile and malleable. Sp. gr. $=7{\cdot}31$. Decomposition was effected by nitric acid; the silver weighed as Ag Cl; and the sulphur partly as S, and partly as Ba SO^4. The analysis of 1·933 gramme yielded in per centage values :

Sulphur	13·37
Silver	86·44
Copper	faint trace

3. *Magnetic Pyrites :* from Madoc (lot 18, con. 2).

Some carefully selected fragments, apparently quite free from FeS^2, were taken for the analysis, and decomposed by chlorhydric acid with subsequent addition of nitric acid. They were strongly magnetic, and the mass from which they were separated exhibited well marked magnetic polarity. Their sp. gr. was equal to 4·485; but most examples from this locality, in consequence of intermixed silica or siliceous rock-matter, vary, as regards sp. gr., from about 4·2 to 4·3.

The picked fragments yielded :

Sulphur	39·98
Iron	59·66

The sample contained no trace of either nickel or cobalt. An assay of 50 grammes, for gold, left nothing on the cupel.

In another examination, the sulphur was determined by decomposing a portion of the finely powdered mineral with nitre and carb. soda in a porcelain crucible. 1·155 gramme gave 3·377 grammes of Ba SO_4. This is equivalent to 40·17 per cent. of sulphur.

4. *Arsenical Pyrites :* from Tudor, in Hastings county.

This sample, if I may so call it, was not analysed, as it consisted merely of a few minute but well-defined crystals, given to me some time ago by my colleague, Professor Croft. Two of these little crystals, examined by the blowpipe, shewed unmistakably the re-action of cobalt; and the presence of this metal appears to be connected with a crystallographic peculiarity in these and other crystals of mispickel. The more common crystals of this mineral, consist, it is well known, of a rhombic prism combined with the planes of a side-polar or brachydome $\frac{1}{2}\breve{\infty}$. In these Tudor crystals, the brachydome in question is replaced by two of less obtuse type, namely, $\frac{1}{2}\breve{\infty}$ and $\breve{\infty}$. Now, the

form $\frac{1}{2}\infty$, the summit angle of which equals 118° 30′, is a comparatively rare form, but it appears to be always present in the cobaltiferous varieties of mispickel, and in the allied species glaucodot.

5. *Arsenical Pyrites :* from Marmora.

Assays of several samples of coarsely crystalline mispickel from this locality, have yielded me comparatively large amounts of gold. In some specimens "free gold" is present in visible specks and grains, but from samples in which no trace of gold could be perceived under the magnifying glass, I have obtained returns varying from 1 oz. 3 dwts. 8 grs. to 3 oz. 8 dwts. 20 grs. in the ton of 2,000 lbs. of ore.

6. *Prehnite :* from Slate River, Lake Superior.

The specimen analysed was obtained personally, in the summer of 1868, from Slate River, a rocky stream which enters the Kaministiquia about fourteen miles above the mouths of the latter on Thunder Bay. The specimen formed part of a narrow vein of more or less compact Prehnite, which cuts at that place the high cliffs of dark alum-bearing slate, or shale, forming the sides of the ravine through which the river flows. These slates belong to the lower portion of Sir William Logan's "Upper Copper-bearing Series of Lake Superior." Near the Prehnite vein, a very remarkable dyke of dark grey Trap or Dolerite crosses the river. The stream has cut its way through it, and as the cliffs at that spot have been much wasted by atmospheric action, the dyke stands out like a wall, varying from about ten to thirty feet in height, with a width of about three feet. On the right bank also, where it retains its wall-like aspect to the edge of the stream, it has been hollowed out into an arch through which a man might pass without stooping.

The Prehnite was only partially (or at least, very slowly) attacked by chlorhydric acid. It was therefore decomposed by previous fusion with carb. soda, the water being of course determined separately. Sp. gr. = 2·882.

The analysis yielded :

Silica	43·41
Alumina	23·80
Sesquioxide of iron.....	1·26
Sesquioxide of manganese ...	0·53
Lime	26·62
Water	4·14

$= 2\,Ca\,O,\quad Al^2\,O^3,\quad 3\,Si\,O^2,\quad H^2O.$

7. *Manganese Ochre*:- from north-east side of Thunder Bay, Lake Superior.

This is an earthy mixture of iron and manganese ochres containing an unusually small amount of water. I did not collect the sample personally, but I am informed that it came from a bed of considerable extent on the shore of the Bay. When sent to me, it was in the form of a dry coarse powder of a dark brown colour. The colour is scarcely changed, after even long ignition in the air. The analysis yielded:

Sesquioxide of iron	33·68
Sesquioxide of manganese ...	22·18
Lime	0·81
Carbonic acid	3·78
Water	3·82
Insoluble rock-matter	36·12
	100·39

It is evident however that part of the manganese (with perhaps a portion of the iron) is present in the state of carbonate. The analysis might therefore be written more correctly as follows:

Sesquioxide of iron.....	33·68		
Sesquioxide of manganese..	16·54		
Protoxide of manganese ...	5·08	= Carbonate manganese...	8·23
Lime	0·81	= Carbonate of lime.....	1·44
Carbonic acid	3·78		
Water	3·82		
Insoluble rock-matter	36·12		
	99·83		

The water and carbonic acid are determined in a separate portion of the substance, the values, given above, being the mean of two determinations. Special tests for sulphuric and phosphoric acids shewed the presence of these bodies in very slight traces.

The less exposed portions of this ochreous deposit would probably be found to consist very largely of carbonates.

RACE HEAD-FORMS AND THEIR EXPRESSION BY MEASUREMENTS.

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The significance of "race" as an element in the progress of diverse nationalities has acquired an importance in modern times, wholly unknown to early historians. The origin of races is still one of the mysteries of science, but the influences arising from the diversity of ethnical character were already in operation at the very dawn of history. Nearly two thousand years before the Christian era, the monuments of Egypt recorded the relations of a dominant fair, or, as conventionally coloured, a red-skinned orthognathic race, with one of the very same Negro type as that which has been the servant of servants through all later centuries. Thus remote in the period to which such well defined diversities can be traced: their significance has been assumed by some as the index of a wholly independent origin; and hence the term "race" has come to be used necessarily with definitions or limitations. It may suffice here to borrow those of an author whose writings will furnish subject for some comment in the following pages.

"Though I have frequently found it convenient to use the word *race*," says Mr. Luke Owen Pike, in his *English and their Origin*, "I wish it to be understood that I do not commit myself to any theory about the first origin of the different races of mankind. I simply recognize the fact that there are various peoples possessing common characteristics in which they differ from other peoples, and which they hand down to their descendants with little change." Thus far it may be assumed that all are agreed. No one, moreover, doubts that those differences are moral as well as physical; and not only influence the dealings of Englishmen with Hindoos, Maories, Caffres, and Red Indians, but perpetuate the divisions of their common nationality, as English, Welsh, Scots and Irish. On this continent, indeed, the interblending of such minuter ethnical divisions is more rapid; yet even here the term "Anglo-Saxon," so familiarly used, applies rather to a common language than a homogeneous race.

Races perish, nevertheless, as well as individuals. But some of the distinguishing characteristics of buried races have out-lasted the overthrow of nationalities, and the results of revolutions traceable to the very causes which they serve to illustrate. Hence the interest attaching to the collection and study of human crania. "Of all the peculiarities in the form of the bony fabric," says Dr. Prichard, "those of the skull are the most striking and distinguishing. It is in the head that we find the varieties most strongly characteristic of different races." By such evidence we may review successive migrations and revolutions, even of prehistoric times: as the geologist finds the tide marks of still remoter ages petrified in the living rock.

A skilled comparative anatomist and ethnologist, on forming a collection of crania from some old frontier burial-ground on this American continent, would experience little difficulty in arranging them, for the most part, according to ethnical classification. He would, indeed, meet with puzzling variations from his assumed types; and the greater his experience, the more readily would he admit that among crania collected from cemeteries exclusively pertaining to races apparently the most pure, examples are to be looked for irreconcileable with their preconceived head-forms: and which, if submitted to him without some such clue to affinity as the locality indicates, he would be unable to assign with certainty to any specific race. Nevertheless, after all due allowance for such abnormal crania, there is, on the whole, a sufficiently well-defined prevalence of certain specialities in form and proportions, to guide the craniologist in an approximate classification open to little dispute. As a general rule, it may be assumed that he is not likely to confound the European with the American Indian skull, or either with that of the Negro; nor can he err in the classification, at least, of well marked examples of minor types, such as separate those of European descent into French, German and English. He would find, accordingly, among the crania of the supposed frontier cemetery a brachycephalic, or short and broad skull, with largely developed maxillaries and zygomata, prominent superciliary ridges, a comparatively narrow and poorly developed frontal region, and flattened or truncated occiput, great facial breadth, both at the cheek bones and in the square, massive lower jaw, and prominence in the nasal bones. This he would recognise as the native American head: Micmac, Abenaki, Narraganset, Mohican, Iroquois, Massachusett, Powhattan, or the like, according to the locality of his researches. Tribal deviations from the assumed

typical American head might possibly help him in this minuter classification; but he would be in little danger of mistaking the head of the Indian for that of his European supplanter.

In the same old cemetery, whether north or south, the ethnologist would not fail to recognize among his collection of crania a type contrasting in many respects most strikingly with the previous one. The face is indeed broad, by reason of the large malar bones and zygomata; but the forehead is narrow and retreating, the nasal bones are small, the profile markedly prognathous, and the brain-case long and narrow, with prominent occiput. It tells of the Negro from Western Africa: Mandingo, Fanti, Yarriba, Fulah, or the like, intruded on the areas of extinct Indian tribes, found intractable alike by Spanish and English colonists in the enforced servitude of the plantations.

Alongside of those lie, in certain localities, on the St. Lawrence, the Penobscot, and other rivers, a peculiar type, or types of head-form, divisible into a long ovoid, and a short, globular one: ascribed, after careful study, on the one hand to the Breton colonist, and on the other to the Franco-Norman, by whom at different periods French colonisation was effected in Lower Canada, Nova Scotia, New Brunswick and Maine.

To the south of those localities, on the Hudson and the Delaware, another short oval or rounded form tells of old and later emigrants from the upper and lower Rhine; but with them, in ever preponderating numbers, occurs a long oval form, divisible into two classes, the one more uniform, the other with the frontal region longer and narrower: traceable to the Anglo-Saxon and Anglo-Celtic colonists who are making a new England and a new Britain of the Western Hemisphere.

Nor will the observant craniologist fail to recognise among his collected crania suggestive traces of hybridity. The native American type, with its characteristic features modified, tells by means of its longer form, less massive jaws, and slighter superciliary ridges, of the adopted half-breed, dwelling on terms of equality with the supplanters of his aboriginal ancestry; or the softened traits of the long, prognathous negro skull—far more abundant than the pure type-form,—show that no prejudice of race prevented the multiplication of a breed of slaves partaking no less of the blood of the dominant white than of the negro bondsman.

Some localities are still purely French, or German; others are the reserves of civilised Indians, or plantations tilled exclusively by those of African descent; and in all of them the local cemetery tells the

tale of the rude forefathers of the settlement. In the great centres of modern industry and progress it is otherwise. There the Old Englander and New Englander, Hollander, Swede, Saxon and Celt, have jostled and intermingled; while the half-breed Indian and Negro have been driven out or absorbed. But still the osteological evidence accords with the change; and the very vagueness of type, though with a predominant long oval, neither wholly Saxon nor Celtic, tells of the interblending of many old and later nationalities with the so-called Anglo-Saxon masters of the New World.

In this, as in so many other ways, there lie buried beneath our feet the chronicles of past events, recorded in characters, long-enduring, if not ineffaceable; and preserving for us a history decypherable by those who will give due diligence to their interpretation.

The comparative recentness of the events thus recorded, and the consequently well defined traces of their diverse phases, render this ethnical chronicle of the NewWorld one of easy interpretation. Nevertheless it illustrates what has been transpiring on old historic areas from the dawn of Assyrian, Phœnician, Greek or Roman history. The ancient cemeteries of France or Britain tell to the educated eye of the intelligent observer a similar tale of Turanian, Celtic, Roman, Germanic and other intrusions: all processes in the change which converted old Gaul into modern France, and Celtic Britain into Saxon England.

The Roman conqueror came into collision with the native Gaul and Briton. But when that event occurred the Christian era was close at hand; and we are becoming more and more familiar with the idea of pre-Celtic and non-Arian occupants of Europe in its prehistoric centuries. What we assume from the recovery of long buried evidence, as the succession of events in prehistoric Europe, agrees with what has been produced in modern centuries by later western movements of the nations. On the American continent we still witness rude, savage aborigines, retiring and perishing before the advance of the very same predominant races by whom a similar change appears to have been wrought in Europe. Here, too, we are familiar with the meeting, and to some extent the intermingling, of races of the most diverse types. The dark-skinned, wooly-haired, long and narrow-headed, prognathous Negro has been brought to supplant the red, or olive-skinned Indian, with coarse, straight black hair, orthognathic profile, and short, broad head. But ere the living type disappears, we are invited to compare it with that of a distinct race, the so-called Mound

Builders, supposed preoccupants of the Ohio and Mississippi valleys, and developers of a partial civilization there, before the advent of the Red Indian to the east of the Rocky Mountains, or south of the great lakes. This opinion rests, in part, on the evidence of numerous earth-works and remains of primitive art; but also on some rare examples of a head-form still more compact and brachycephalic than the shortest of Red Indian skulls. But the prevalence of cremation in the sepulchral rites of this extinct race has hitherto rendered the researches of explorers of little avail for the craniologist. Examples of true mound-skulls are as yet too few to justify absolute conclusions in reference to a well-defined type. To a considerable extent, indeed, it must be admitted that the assumed Mound-Builder type of head has been mainly deduced from a single, very remarkable, but possibly exceptional example.

Whilst, however, increasing experience warns us of the danger of basing comprehensive ethnical classifications on a few examples, the significance of head-form, as a test of race, is widely recognized; and with the admission of the value of such type-forms, the modes of indicating them excite new interest. It is not sufficient now that we are satisfied of the recovery of a human skull from the loam of the Neanderthal cave, in the limestone cliff overhanging the river Düssel; or in the same breccia with the fossil elephant, rhinoceros, and hyena of the Engis cave, near Liége. We want, if possible, to know what ethnical evidence they supply; and ere long find M. Pruner-Bey demonstrating to the Anthropological Society of Paris an undoubted Celtic character for the one, while the other is compared by Lyell with "the highest or Caucasian type."

With the demand for this new class of facts, the mode of presenting them in the most accessible, trustworthy form, acquires an importance unthought of till now. A cast is, of course, the nearest approximation to the original; but this is costly, cumbrous, and only available to a select few. The oldest of all methods, that of the pencil, can not be lightly undervalued. It is due to the labors of the Egyptian draftsman that we know beyond all question of the existence of race types of widest divergency, nearly three thousand seven hundred years ago; and that the race which still differs most markedly from the European type has undergone no change during all that lapse of time. With results of such value traceable to the art of the old Egyptian painter, we are not likely to underestimate its enduring worth; and the appeal

to the eye afforded by engraving and wood-cut is abundantly appreciated by the modern anthropologist. By means of an accurate pencil, with the economical facilities of the wood-engraver, the most characteristic specialities of race, in physiognomy, form, or arts; or the distinctive peculiarities of any well-marked cranium: are easily reproduced, and introduced as part of the text.

Yet even this time-honored method, though it has stood the test of ages in a way none other has done, is not absolutely to be relied on. There is always a danger, on the one hand, of the draftsman slighting the essential niceties of detail, and so losing the most characteristic features; or, on the other hand, of the enthusiastic theorist exaggerating supposed typical characteristics; or imagining in the object of his study the preconceived features he is in search of.

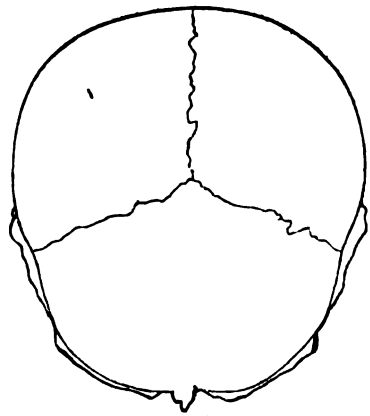
The history of the "Scioto-Mound skull,"—most remarkable among the crania of the American "Mound Builders,"—supplies an interesting illustration of the difficulties attendant on graphic representation of type-forms. The first volume of the "Smithsonian Contributions to Knowledge," in which Messrs. Squier and Davis presented to the world the fruits of their researches among the mounds of the great Mississippi valley, is illustrated with so much artistic skill, that the reader might not unreasonably repose implicit faith in their views of the remarkable skull, producesd in evidence of the physical characteristics of the race, to whose monuments and art-workmanship the volume is devoted. The idea of a pre-Indian race, of a higher type, and superior mechanical and artistic skill to the forest-tribes of the New World, had a charm surpassing that of the rude Troglodytes and Flint-folk of Europe's prehistoric ages; and hence "the counterfeit presentment" of the old Mound Builders has left an impression on the American mind, not likely to yield to anything but the most incontrovertible evidence conflicting with the theories for which it has furnished a basis.

Apart from any theory, it is a remarkable example of a cranium of extreme brachycephalic type, approaching very nearly to a correspondence in length, breadth and height; and is justly prized as one of the most valuable objects in the Morton Collection of the Academy of Sciences at Philadelphia. Its facial angle, internal capacity, and most characteristic measurements, are recorded by Dr. E. H. Davis, and have been repeatedly turned to account in discussing the significance of this interesting discovery. When brought into comparison with corresponding measurements of a skull of markedly dolichocephalic propor-

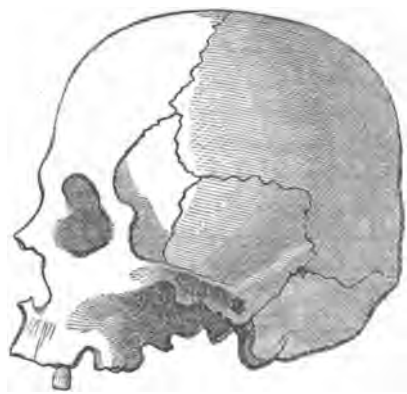
tions, such as the Negro type; or even with the native Iroquois cranium: the contrast is very striking. But Professor Huxley, when discussing the results of a similar comparison of the proportions of an English skull, noted in the catalogue of the Hunterian Museum as typical Caucasian, with that of the Engis cave, remarks that they only serve to show "that cranial measurements alone afford no safe indication of race." He therefore resorts to the pencil, supplementing the metrical test by a series of outlines of typical skulls placed in juxtaposition, and thereby aims at a more reliable demonstration. Nor can it be doubted that, where available, drawings, measurements and description, employed in combination, are needed to supply an adequate substitute for the original.

But the value of any system of measurement consists in its easy application, and equally ready reproduction; so that if its results can be rendered specific and determinate, they are available to an extent far beyond any other means of comparison; and are nearly free from chances of error such as affect the draftsman's labors. This is abundantly illustrated by the Scioto-Mound skull. A minute comparison of Messrs. Squier and Davis's lithographs with the original reveals important discrepancies, which in no degree affect the accompanying measurements. After carefully comparing the skull with the views in question, I satisfied myself that the vertical view—so important for comparative purposes,—is specially inaccurate. In the original the peculiar characteristics of what I have elsewhere designated the truncated occiput, is seen in its extremest development, passing abruptly from a broad, flattened occipital region, including the posterior portion of the parietal bones, to the greatest parietal width, and then tapering, with slight lateral swell, until it reaches its least breadth immediately behind the external angular processes of the frontal bone. This remarkable parieto-occipital flattening has been produced, I conceive, by the use, in infancy, of the cradle-board, but without any pads or bandages affecting the forehead. The frontal bone is unusually high and well-arched; and hence I infer that the occipital modification has resulted without any purposed aim at a change of form, as in the case of the Flathead Indians. It illustrates the effect of persistent and greatly prolonged pressure on the occipital and parietal bones, in one direction, acting on a head naturally of extreme brachycephalic proportions and great posterior breadth. The views here given of it, vertically and laterally, have been executed from the original with

considerable care;* and while they serve to indicate some important



SCIOTO-MOUND SKULL:—VERTICAL VIEW.



SCIOTO-MOUND SKULL:—LATERAL VIEW.

peculiarities, either omitted or inaccurately presented in the engravings

* The wood-cuts, originally executed to illustrate an abstract of Lectures on "Physical Ethnology," delivered by me at the request of the Regents of the Smithsonian Institution, at Washington, in 1862, have been kindly placed at my service by Professor Henry.

referred to; they also illustrate the uncertainty which must pertain to the most careful reproduction of typical forms by means of the pencil. Comprehensive deductions as to the characteristics of the supposed precursors of the Red Indians in the great river valleys of North America, have been based on the assumption—rendered all the more reasonable by the general skill and accuracy of Messrs. Squier and Davis's illustrations,—that the well-executed lithographs of the Scioto-Mound skull did correctly represent the original.

Seeing, then, the liability of the most artistic drawings to fail in scientific accuracy, it becomes obvious that if a system of measurements can be determined and generally adopted, capable of producing results available as a test of comparative cranial form, it will prove alike easier in its application, and more trustworthy, than the pencil. The photographic art, so reliable in many respects, has indeed come to our aid, and greatly facilitates the production of truthful drawings, but it does not solve all the difficulties in question, owing to inevitable exaggeration of the nearer points, and consequent misrepresentation of relative proportions on which so much depends.

The *Crania Britannica* is an example of the illustrative process applied with a degree of skill and accuracy that could scarcely be surpassed; but the result is very costly, and consequently limited in the number of examples illustrated; whereas ethnical deductions, to be of much value can scarcely be founded on too many observations. Whatever system, therefore, is simple, free alike from costly application and liability to error, and sufficiently definite in character to make its results, so far as they go, precise and definite, will best satisfy the aims of the comparative craniologist: and those the test of measurement professes to supply. But even if a metrical system be admitted to embrace more certainly than any other, the requirements here specified: the question still remains undetermined, what are the most useful measurements for giving expression to the specialities of head-forms. No detailed system has yet obtained universal acceptance; and hence the value of some important contributions to science is diminished, owing to the impossibility of bringing the results of different observers into comparison. Looking to the growing interest which attaches to this subject among Anthropologists, I have more than once proposed giving publicity to the early labours of a deceased friend in the department of craniometry, under the belief that the elaborate minuteness of detail adopted by him embodies some valuable suggestive

hints; but the distaste of editors—not to speak of readers,—for columns and tables of measurements has as often deterred me.*

Among a group of fellow-labourers in the investigation of Scottish archæology, whose memory I now recall with many pleasant associations and vain regrets, was the late Dr. Walter Adam, a gentleman of liberal tastes and accurate scholarship.† I was indebted to him for coöperation in various investigations, both literary and antiquarian; and when engaged, in the years 1849 and 1850, in collecting and minutely studying ancient Scottish crania, with a view to determine various points, since discussed in the "Prehistoric Annals of Scotland," and subsequent publications: Dr. Adam put into my hands a series of measurements of French crania taken under the following circumstances. After enjoing the advantages of pursuing his studies under the care of the distinguished anatomist, Dr. Barclay, and completing the requisite course for his degree in Medicine in the University of Edinburgh, he spent some time at the medical schools of Paris. Dr. Spurzheim, the favorite pupil, and later associate of Dr. Gall, the founder of the system of Phrenology, was at that period lecturing in the French capital, and winning the attention of many enthusiastic students by the novelties of the new science he promulgated. From 1807 to 1813 Gall and Spurzheim lectured conjointly on their favourite subject to Parisian audiences, and thereby trained many followers by whom their opinions were spread throughout Europe. Dr. Adam was fascinated for a time by the attractions of the lecturer, as well as the seductive promises of the science; and bringing its principles to bear in the direction of his own national predilections, he proceeded, under the guidance of Dr. Spurzheim, to select from a series of skulls in the University Museum, recovered from the Parisian Catacombs, a group illustrative of the Celtic head.

* An abstract of the series of measurements referred to, prepared as a supplement to the "Inquiry into the physical characteristics of the ancient and modern Celt," (*Canadian Journal*, Vol. IX.), to which, as will be seen, it had a fitting bearing, was omitted, owing to the length of that paper. The present paper originated in a renewed attempt at their publication; but I have been compelled to limit myself to very brief selections, after preparing the whole tables for the press.

† Dr. Walter Adam, Fellow of the Royal College of Physicians of Edinburgh, and a member of various learned Societies, was a son of Alexander Adam, LL.D., Rector of the High School of Edinburgh, author of the "Roman Antiquities," and other works. He died in 1857.

Here it is obvious that the great German craniologist undertook the same problem of ethnical classification which, in our introductory remarks, has been applied in theory to an early frontier cemetery of the New World. But the problem becomes enormously complicated, when brought to the test in some great common bivouac of the nations, such as Paris has been through so many centuries, to Gaulish, Roman, Merovingian and Carlovingian Frank, Norman, and English occupants. Though the predominance of the Celtic element in the modern French is universally admitted, Paris is the least likely to yield evidence of its persistency; and reasoning *a priori*, it would be difficult indeed to determine the probable classification of any chance skull recovered from the Parisian Catacombs.

On what principle Dr. Spurzheim and his disciple did determine the celticity of these Parisian Crania I failed to ascertain. The interval which had elapsed since Dr. Adam pursued his cranial and phrenological investigations, under such a mentor, had greatly cooled his ardour; and the note with which he accompanied the gift of his elaborate tables of measurements, after discussing other subjects of mutual interest, concludes with the remark: "You are welcome to light your fire with all about the Parisian Catacombs." Aware, however, of my friend's painstaking and accurate habits of observation, and the peculiarly favourable opportunities he enjoyed for such investigations, I carefully preserved the fruits of his labours as an interesting contribution to minute craniomety. He remarks of them: "The series of external measurements of Parisian crania were taken from skulls selected by Dr. Spurzheim, from a number in the museum of the University, as most illustrative of the Celtic French head. They will show you, I think, every possible measurement of the human cranium. In regard to the phraseology: in one respect, like Professor Owen, I had the benefit of the instructions of Dr. Barclay, and also of Mr. Abernethy. The side-numbers refer to the crania themselves, in the University museum. So far as appeared, precision could be attained only by referring every dimension to the compression of the zygoma, the measurement being seven-eighths of what I consider the normal transverse of at least the Caucasian cranium,—that is half the length of the head,—the long admitted statuary scale."

It thus appears that, in aiming at an exhaustive system of craniometry, Dr. Adam combined the practical experience of Dr. Spurzheim with the teachings of the eminent Scottish anatomist, Dr. John Barclay, and

of Dr. Abernethy, the no less distinguished surgeon. The measurements finally adopted by him amount in all to seventy,—or more strictly to sixty-nine: No. 6 being left blank in the tables received by me. They furnish evidence of laborious industry, and are necessarily of a very comprehensive and minute character. Of their practical utility it is obvious that Dr. Adam latterly entertained grave doubts. But his industry had then been diverted into wholly different channels; and his faith in the special teachings of Dr. Spurzheim had long passed away. It is more important for us to note that he retained full faith in the tables embracing all that the craniometrist aims at. Lest, however, the remark quoted from a private note, that "they show every possible measurement of the human cranium," and so achieve the desideratum of an exhaustive metrical system, should suggest a false idea of the writer, it will not be out of place to add that Dr. Walter Adam partook largely of the modest and amiable virtues ascribed to his father. He was sensitive and retiring in his habits; and the decided terms here expressed are highly characteristic of his simple sincerity. His minute and somewhat formal accuracy, even in trifles, renders his detailed proportions of Parisian crania worthy of the utmost confidence; though it will not admit of literal acceptance that they embrace "every possible measurement."

Whatever opinion the modern Anthropologist may form of the neglected system of Gall and Spurzheim, no doubt can be entertained as to the services rendered by them in his special department of study. The practical failure of their system of an assumed index of the "phrenology" or mental characteristics of each individual, impressed on the surface of the skull, and representing certain supposed brain-organs of the mind, need not blind us to the valuable results of their labours in other directions, and especially in that of comparative craniology.

Infinite as are the varieties of individual physiognomy, there is, nevertheless, a national type of face, difficult indeed to define, yet recognisable at a glance; and so also, amid endless deviations from any supposed national head-form, the hatter, in adapting his manufactures to different localities finds the variations from the common type of each range within comparatively narrow and constant limits. Assuming, then, the significance of diverse cranial conformations, and of certain relative proportions in the heads of different races, as indices of ethnical distinctions, various metrical tests have been suggested. Drs. Scherzer and Schwarz, who accompanied the Austrian exploring expedition in

the ship Novara, devised an elaborate system applicable to the whole human figure, "as a diagnostic means for distinguishing the Human Races," and including thirty-one measurements of the head. By this means they aimed, and as they believed, successfully, at determining a system adapted to the classification of men according to race-differences. But so many difficulties beset the craniometrist, in the uncertainty as to determinate points, of uniform occurrence, from which to start in the various measurements; and deviations from any assumed normal arrangement in the direction and relative position of the sutures are so numerous, that: while one class of modern observers still aims at overcoming those sources of error by multiplying the details of measurement; the greater number—feeling somewhat as Dr. Adam did, the difficulty of interpreting the results of such minute labour,—incline to fall back mainly on the earlier and simpler tests of length, breadth, height, circumference, and internal capacity.

Of the former class, Dr. J. Aitken Meigs merits special recognition. After a careful resumé of the labours of his predecessors, he has set forth in "The North American Medico-Chirurgical Review" for September, 1861, an elaborated scheme of cranial admeasurements, with minute indications as to the fixed points on which each depends. Including the face, and such special details as the diameters and shape of the foramen magnum, Dr. Meigs' measurements amount in number to forty-eight. Among observers who have limited themselves to the few most notable calliper and tape measurements, Drs. Thurnam and Davis may fitly represent this second class. In their beautifully executed "Crania Britannica" they have only made some slight, though not unimportant additions to those employed by Dr. Morton, in the "Crania Americana:" relying, in part, on the pen for completing the work, by means of descriptive details; but still more on wood-cuts and full-sized lithographs. The plan of Dr. Spurzheim—like those of Drs. Scherzer, Schwarz and Meigs,—appears to have contemplated an exhaustive metrical system complete in itself.

But Dr. Adam claimed to have embodied in his labours on the crania of the Catacombs the results of instruction derived from Barclay and Abernethy, as well as from Spurzheim The nomenclature and measurements, therefore, employed by him, under the special direction of the distinguished Parisian lecturer, cannot be wholly devoid of interest to the modern anthropologist, and may furnish suggestions of practical value. They are classified as follows:

Measurements in the Mesial plan, (External rectilinear).

I. Inio-glabellar measurements. 1. From inion to glabella. 2. From inion to fronto-nasal suture. 3. To centre table of frontal sinus. 4. From coronal process of occipital bone to naso-alveolar sinuosity. 5. Os frontis, mesially. 6. (*blank*).

II. Measurements from inial margin of foramen spinale. 7. From the inial margin of the foramen spinale to the coronal point of the occipital bone. 8. —to meeting of the coronal and sagittal sutures. 9. —to furthest point of os frontis. 10. —to fronto-nasal suture.

III. Measurements on the mesial plan. 11. From glabellar margin of foramen spinale to coronal point of occipital bone. 12. —to coronal point of sagittal suture. 13. —to meeting of coronal and sagittal sutures. 14. —to fronto-nasal suture. 15. —to latero-glabellar margin of right nostril. 16. —do. of left nostril. 17. —to naso-alveolar sinuosity. 18. —to inial sinuous margin of palatal bones.

IV. Measurements parallel to the mesial plan. 19. From fronto-nasal suture to glabellar margin of floor of right nostril. 20. Do. of left nostril. 21. From basilar margin of right orbit to sinuous surface of right coronal maxilla. 22. From do. of left orbit to do. of left coronal maxilla. 23. From latero-glabellar sinuous margin of right nostril to inial surface of right coronal maxilla. 24. Do. left to left do. 25. From glabellar surface of right zygomatic enclosure to inial surface of right stylo-mastoid foramen. 26. Do. left to left do.

V. Oblique measurements. 27. Cranium, from right fronto-malar suture to furthest point of left parietal bone. 28. Do. from left to right do. 29. Face, from inial sinuous margin of right malar bone to latero-glabellar sinuous margin of right nostril. 30. Do. from left to left do.

VI. Transverse Basilar measurements. 31. Distance between lateral surfaces of stylo-mastoid foramina. 32. Between lateral surfaces of carotid canals. 33. Do. mesial do. 34. Do. lateral surfaces of foramina ovalia. 35. Do. mesial do. 36. Do. lateral surfaces of cuneiform process of os occipitis glabellar.

VII. Transverse Temporal measurements. 37. Distance between peripheral surfaces of mastoid processes. 38. Do. inial prolongations of zygomata. 39. Do. auditory ridges. 40. Do. peripheral surfaces of zygomata. 41. Do. central edges of zygomata.

VIII. Transverse Parieto-coronal measurements. 42. Distance between lateral surfaces of parietal bones. 43. Do. of squamous sutures,

coronad. 44. Do. inial margins of os frontis at coronal suture. 45. Do. lateral ridges of os frontis. 46. Do. orbital processes of os frontis.

IX. Transverse Facial measurements. Fronto-orbital. 47. Distance between fronto-malar sutures on margins of orbits. 48. Do. between mesial surfaces of orbits at fronto-nasal suture. 49. Do. between do. at lateral surfaces of nasal processes of coronal maxillæ.

Malo-maxillary. 50. Distance between inial sinuous margins of malar bones on line of middle of orbit. 51. Do. most prominent edges of lateral margins of orbits. 52. Do. lateral edges of orbito-maxillary foramina. 53. Do. between malo-maxillary sutures, basilar and glabellar. 54. Do. lateral surfaces of alveoli of coronal maxilla. 55. Do. lateral surfaces of palatal foramina.

X. Measurements of Appertures. Orbits. 56. Distance between frontal and maxillary margins of right orbit in direction of mesial plane. 57. Do. of left do. 58. Obliquely between fronto-mesial and malo-basilar sinuosities of margin of right orbit. 59. Do. of left.

Nostrils. 60. Distance transversely between mesial surfaces of glabellar sinuous margins of nostrils. 61. Do. of inio-palatal margins of nostrils.

Foramen spinale. 62. Distance between glabellar and inial margins of foramen spinale. 63. Do. between lateral margins.

64. Periphery of os frontis in mesial plane from fronto-nasal to coronal suture. 65. Do. of sagittal suture. 66. Do. of os occipitis in mesial plane from termination of sagittal suture to inial margin of foramen spinale.

67. Periphery of cranium from fronto-nasal suture to inial margin of foramen spinale. 68. Do. to glabellar margin.

69. Transverse periphery of cranium at right angles to mesial plane, between coronal surfaces of meatus auditorii.

70. Transverse periphery of cranium on level of orbital processes of os frontis and most inial point of os occipitis.

Such are the minute details in the system of cranial admeasurements adopted by Dr. Adam, under the guidance of his experienced instructors.

The principle which guided him in the course he pursued is further illustrated by the remark: "It is abundantly evident that, before proceeding to curvature, there must be accurate ascertainment of the abscissa and ordinate." Hence the numerous transverse measurements introduced. But he retained to the last his faith in the assumed "statuary scale;" and, in discussing the views set forth by the late

Mr. D. R. Hay, in his "Science of those proportions by which the human head and countenance, as represented in works of ancient Greek art, are distinguished from those of ordinary nature," he says: "My impression is that Mr. Hay is quite correct; and I am led to it not less by the elegance of his outlines, than by the fixity of my said 40, (distance between peripheral surfaces of zygomata,) the measurement being seven-eighths of what I consider the normal transverse of at least the Caucasian cranium." But, he adds, "I have no thought of relying on the method of a verages;" and so he has not deduced any mean results of the measure ments, otherwise carried out with such laborious accuracy, for the purpose of determining the characteristics of crania from the Catacombs of Paris, selected apparently, by Dr. Spurzheim, as the most typical examples of pure Gaulish or Celtic head-forms. Llike many another labourer in the same field of observation, Dr. Adam failed to discover the precise application of his metrical system either for ethnical or psychological purposes; and when, long afterwards, his carefully executed tables were handed over to me, it was as fruits of early labour chiefly designed to aid him in researches into the assumed relations of mental and cerebral development, and which he had ceased to regard as of practical utility.

From the comprehensive series of measurements, arranged under the above heads, I have here selected such as will afford an opportunity of comparison with tables already furnished in former papers: and especially with those produced as some means of testing the characteristics of the British or Celtic cranium. They are taken as indicating the greatest circumference, length, parietal and frontal breadth, and also the zygomatic diameter to which Dr. Adams assigned so much importance, as the test of approximation to an ideal classic standard, or accepted statuary scale. The differences in specific points selected for determining some of the measurements must be borne in remembrance in instituting any comparison with previous tables. They are as follows: A. (4.) From coronal process of occipital bone to naso-alveolar surface. B. (5.) Os frontis mesially. C. (42.) Distance between lateral surfaces of parietal bones. D. (37.) Distance between peripheral surfaces of mastoid processes. E. (40.) Between peripheral surfaces of zygomata. F. (70.) Transverse periphery on level of orbital process of os frontis and most inial point of os occipitis.

MEASUREMENTS OF PARISIAN CRANIA.

No.	Sex.	A (4)	B (5)	C (42)	D (37)	E (40)	F (70)
1		7.53	4.45	5.17	4.36	4 81	" "
2	M	7.70	4.70	6.07	5.02	5.33	21.00
3		7.55	4.00	5.00	4.40	4.85	20.75
4	M	7.42	4.45	6.23	4.90	5.33	20.56
5	M	7.40	4.46	6.10	4.66	5 33	20.50
7	M	7.84	4.38	5.83	4.90	5.14	21.00
8		6.70	3.94	5.44	4.22	4.52	18.50
9	M	7.55	4.60	5.90	5.05	5.32	20.00
12		6.90	4.16	5.52	5.10	5.03	19.15
13		7.30	4.30	5.73	4.66	5.04	20.37
15		6.97	4.14	5.41	4.64	4.50	19.00
16		7.47	4.52	5.93	4.70	" "	20.50
22		7.30	4.40	5.44	4.70	4.84	19.75
23	M	7.63	4.64	5.62	4 65	5.26	20.62
25	M	7.58	4.40	6.03	5.30	5.46	20.87
26		6.90	4.20	5.58	4.63	5.04	19.12
27	M	7.20	4.36	6.01	5.30	5.60	20.87
29	M	7.30	4.26	6.03	5.06	5.12	20.62
31		7.40	4.20	5.50	4.86	4.93	20 00
32		7.67	4.34	5.08	4.72	4.88	20.12
34	M	7.27	4.57	5.80	4.75	4.95	20.18
36	M	7.32	4.62	6.02	5.07	5.23	20.50
37	M	6.94	4.33	5.92	5.30	5.28	19.81
38		7.92	4.60	5.26	4.63	4.91	20.87
39	M	6.95	4.22	5.66	4.65	4.83	19.50
40		7.50	4.20	5.02	4.40	4.64	19.50
41	M	7.40	4.24	5.76	4.80	4.96	20.06
50	M	7.36	4.54	5.97	5.27	5.52	20.31
Mean.	Male.	7.391	4.451	5 . 30	4.979	5 244	20.427
"	Female	7 316	4.265	5.390	4.617	4.832	19.802
"	Total.	7.356	4.365	5.680	4.811	5.061	20.149

The crania subjected to measurement number twenty-eight in all, of which fifteen are marked as male; and the remainder may be assumed, without doubt, to be female. In the tables of Dr. Adam they are systematically arranged throughout in the two sets, irrespective of their numerical order. The larger group, embracing fifteen, begins with No 37, and the first column is thus headed: "Crania as numbered, and

the sex denoted by Dr. Spurzheim." In the other group of thirteen crania, as exhibited on a separate series of sheets, the corresponding column is left blank; but a comparison of the two groups of measurements, and of the total mean proportions of each, adds confirmation to the assumption that a nearly equal number of male and female skulls had been selected, with a view to determine more accurately the typical characteristics common to the race. The means of determining this, as well as other points that may suggest further inquiry, are, in all probability, still accessible to Parisian craniologists.

Other columns have been ruled, and some of them headed, though they remain otherwise blank. They help to illustrate the minutely exhaustive process aimed at, *e. g.* "From fronto-nasal suture to glabellar margin of right nostril." "Do. to glabellar margin of left nostril." "From latero-glabellar sinuous margin of right nostril to inial surface of right coronal maxilla." "Do. of left, to inial surface of left." The peripheral, or tape measurements, have also been originally projected on a much minuter scale, judging from the number of columns left blank under the general heading; but those of most importance are recorded. The head-lines of unfilled columns also include the following: "Apparent age;" "Apparent strength of the individual:" "Form;" "Outline of foramen spinale;" and—specially suggestive of the phrenological impetus to which the whole measurements were originally due,—this heading: "Character, according to Dr. Spurzheim."

The loss of Dr. Spurzheim's inductions relative to the mental characteristics of the old sleepers in the Parisian Catacombs, as derived from external protuberances of their crania, is not greatly to be deplored. A point of more interest at the present time is happily recorded for us, in so far as measurements supply any clear indication of head-forms. The question of the typical form and proportions of the Celtic cranium has already been minutely discussed in this journal. The "Inquiry into the physical characteristics of the ancient and modern Celt" attracted some notice at the time of its publication; was quoted in more than one European journal, and reprinted entire in the London *Anthropological Review*. After drawing attention to one frequent source of error traceable to the neglect of this fact that a type, as an ideal abstraction, embodying the characteristics of both sexes, and embracing the mean of many variations, must not be determined from one or two selected specimens: it was there shown that many of the

highest authorities among modern comparative anatomists and ethnologists have given publicity to opinions all pointing more or less definitely to an excess of longitudinal diameter, and an unusually long but low frontal development, as among the most marked characteristics of the Celtic cranium.

In this, recent observers only confirm from more extended investigation, opinions advanced at an early period, including those of Prichard and Retzius. But other high authorities have shown an inclination to challenge such, as conclusions resting on no satisfactory evidence. Dr. Thurnam, in the *Crania Britannica*, quotes the distinguished Swedish naturalist and archæologist, Professor Nilsson, as stating in a letter to him, in reference to the supposed Celtic type of cranium, that nothing seemed to him more uncertain and vague than that term; for, he says, hardly two authors have the same opinion on the matter. He accordingly urges on his correspondent the desirableness of some one in England undertaking the selection of a skull embodying what those enjoying the special advantages which he assumes to pertain to that country, shall agree upon as constituting the Celtic form of cranium. Of this he proposes that casts shall be taken, and so a type-form of the race be determined.

Although the statement of the Swedish naturalist as to an utter want of agreement relative to the typical characteristics of the Celtic cranium, can by no means be admitted; his requirement has not only been long felt as a desideratum, but repeated attempts have been made to realise it. And here we are reminded of our obligations to phrenology; for foremost among those who have laboured with this object in view stand its founders and early disciples. The observations of Dr. Adam on the crania of the Parisian Catacombs serve to illustrate some of the researches conducted by Dr. Spurzheim with this object in view; and other no less definite evidence shows that the zealous phalanx of British phrenologists called into being by the teachings of Dr. Gall and his collaborateurs, followed his example, and systematically aimed at determining the characteristics of the Celtic, as well as other leading ethnical types. Certain crania and casts are referred to in the *Phrenological Journal* as selected from a number of the same tribe or nation, so as to present, as nearly as possible, a type of the whole, in the collection of the Edinburgh Phrenological Society; and among them is a cast marked as a "Long Celtic skull." It is no less noticeable for narrowness than length; and especially for the elongated, narrow frontal region,

now accepted by many French and English anthropologists as a characteristic feature of the true Celtic head-form.

Assuming the race assigned to the Parisian Crania to be correct, the idea thus indicated finds some apparent confirmation from the measurements now produced. Derived as those are stated to have been, from the Catacombs of Paris, they might indeed, if selected from among the contents of that vast charnel-house as characteristic of the prevailing form to be found there, be fairly assumed as representing the typical French head. But as illustrations of the Gaulish or French-Celtic head-form, as contra-distinguished from Iberian, Burgundian, Frankish, Norse, or other type, their value depends wholly on the grounds of selection. But of these, unfortunately, we have no record; and can only surmise that Dr. Spurzheim had already satisfied himself that the long skull, with narrow frontal region, was the true Celtic one. Certain it is that some such preconceived idea must have guided him when selecting crania from the great Parisian golgotha, in order that his Scottish disciple might gratify his natural predilections, while devoting himself to the mastery of the laws of mental idiosyncracy as indicated in the development of assumed cerebral organs, and the consequent modification of the osseous brain-case. Nor can we wisely allow the rejection of his favourite dogmas to prejudice us against the purely craniological observations of one whose opportunities were only equalled by his diligence in the study of individual and ethnical diversities.

Dr. Johann Gaspar Spurzheim studied in the University of Treves, near to which he was born, pursued his medical studies and graduated at Vienna, lectured in different cities of Germany, Prussia, Denmark, France and England; revisited Paris, and resided as a lecturer there from 1817 to 1825, when he returned to Britain. All the events of his age were calculated to suggest more strongly to his mind the existence of essential ethnical differences between the true German and the descendant of the ancient Celt of Gaul; but nothing in his peculiar views as a phrenologist tended to bias his opinions in favor of a long, rather than a short Celtic head-form.

But, strangely enough, after the lapse of more than half a century, the right of property in this idea of long-headed Celts, with other questions of a kindred type, has been brought into Chancery, and adjudicated upon in that high court of appeal: with results in which we may perhaps be allowed to claim some interest. In 1866 there issued from the press of Messrs. Longman & Co., the well-known

London publishers, a work already referred to, by Mr. Luke Owen Pike, entitled "*The English and their Origin. A Prologue to Authentic English History.*" Mr. Pike, a graduate of Oxford, and member of Lincoln's Inn, has devoted himself to literary and scientific pursuits; and specially taken an active part in the Anthropological Society of London, of which he is a Vice President. His "Origin of the English" attracted considerable notice, was reviewed in various leading journals; and so, as would seem, tempted a literary rival, who had already contested the palm with him at the Eisteddfod of their common Welsh nationality, to follow in his steps with his "*Pedigree of the English People.*" But the latter presented, in certain parts, so near a resemblance to its predecessor, not only in language, method and argument, but even in such errors as the most painstaking author is liable to, that the literary barrister summoned his rival before Vice-Chancellor James, on the 27th of April last, for having, in plain terms, stolen his ideas, his arguments, quotations, references, and even his very blunders, and made open merchandise of the whole as his own.

It must be admitted that the defendant cuts a very sorry figure in court. Though we propose to have a word to say, before closing, in reference to certain claims of priority and originality set forth on Mr. Pike's behalf: there is no doubt that his work was the honest result of much labour and research, handled in a scholarly manner; and with no other than the legitimate aims of authorship in view. As to his rival, he is a Doctor of Philosophy; conversant at least with the Welsh language; and Professor, in Carmarthen College, not only of German, but of Ecclesiastical History, Mental and Moral Science, and General Literature. But notwithstanding such a comprehensive profession, his classical knowledge does not seem to have stood him in good stead. The property in certain criticisms in dispute between plaintiff and defendant, relative to Gildas, the old historian, of the sixth century as is believed, brought the latter's name prominently into court. But the defendant, it seems, only knew him through Bohn's translation; and is indeed quoted in court as stating that "Gildas copied Bede," though the venerable monk of Jarrow, whose labours are thus affirmed to have been turned to account sometime towards A.D. 550, belongs as a historian to the eighth century. The plaintiff's counsel drew from him the admission that he resorted to Bohn's edition "because he felt diffident of translating the Latin himself." His own counsel, more bent on winning his cause, than careful of his client's scholarly reputation,

asserted for him, at a later stage, in accounting for the true reading of a much contested erasure: "The fact is, my client's book shows in many places that he had a most imperfect knowledge of Greek, and I believe did not know how to spell the word *physiological*." No wonder, therefore, when Mr. Pike, in quoting from Livy about the *rutilatæ comæ*, or reddened hair of the Galli, fell into an error, his hapless imitator—as is the way with such poachers on literary preserves,—transferred it, blunders and all, to his own pages. So, after prolonged trial, and much argument on both sides, the Vice-Chancellor decided that the plaintiff had made out his case, and was entitled to an injunction to restrain the publication of his rival's book; to a refunding of all money already obtained by its sale; to costs of suit; and, in fact, to all "the damages in cases of literary piracy."

This trial has, not unnaturally, excited considerable interest in literary circles. Mr. Grove, Q.C., late President of the British Association, was Mr. Pike's leading counsel; Dr. Beddoe, President of the Anthropological Society of London; its Honorary Secretary, Mr. C. Carter Blake, Lecturer on Comparative Anatomy at Westminster Hospital; Dr. Rowland Williams; Mr. Watts, of the British Museum Library, and others: appeared as witnesses; and the Court had to listen to citations from Livy, Gildas, Pouchet, Retzius, Prichard, Blumenbach, and other authorities not usually supposed to carry weight in Chancery suits. We now propose to advert to one or two points in which readers of the *Canadian Journal* may claim some interest. Mr. Kay, Q.C., one of the defendant's counsel, in cross-questioning Mr. Pike, as to the uses made by him of other authorities, asked "whether he had not found the idea of getting information from hatters in Professor Wilson's paper, published in the *Anthropological Review?*" His answer is, that the paper in question appeared in 1865, while certain letters produced in court in proof of his researches on the same subject, bore the date of 1864. But, he states, "after seeing Professor Wilson's paper, he added a note to what he had previously written, and mentioned this agreement in method, with Professor Wilson's name."

The idea of making the hat a test of the form and size of the head is one so simple and obvious, that it would be childish to attach any great merit to its first application for the purpose. When the mausoleum of the poet Burns was opened in 1834, for the interment of his widow, some little scandal was created by a Dumfries Bailie trying his hat on the poet's skull, and publishing to the world the modest truth

that his own cerebral capacity, when gauged by this simple process, fell considerably short of that of the Ayrshire bard. When, however, dates are thus specifically assigned to our first publication, we may be pardoned correcting them.

The paper referred to in the evidence above quoted, is the "Inquiry into the physical characteristics of the ancient and modern Celt," which appeared in the November number of the *Canadian Journal* for 1864. It was forwarded, as usual, to the Anthropological and other Scientific Societies of London and elsewhere; in addition to author's copies posted to English correspondents and friends: and in this way was transferred to the pages of the *Anthropological Review*. I might refer to earlier dates at which the subject was brought before the Canadian Institute; but it is sufficient that my views on this subject were published in 1864, and soon after attracted notice both in London and Paris; and among those are ideas of more importance in their bearing on the general question than the one referred to in Mr. Owen Pike's note.

The Honorary Secretary of the Anthropological Society, Mr. C. Carter Blake, when questioned by the defendant's counsel, made this reply: "He believed the fact that the modern English possess long skulls was first established by the plaintiff, (Mr. Luke Owen Pike), and that he had first combined the propositions that the Celtic skull was long, that the Teutonic skull was short, that the modern English skull is long, and that therefore, the English are descendants of the ancient Britons. That was perfectly new."

Now we venture to question whether that was perfectly new. Mr. Pike says, in answer to the defendant's counsel: "He believed his argument concerning the skull-form of the English, in relation with the skull-forms of the ancient and modern Teutons, and of the ancient and modern Celts, to be original. He had arrived at it by a long process of sifting evidence which was very contradictory." But we had arrived at results, in many respects similar, after sifting much conflicting evidence: as set forth in the "Inquiry into the physical characteristics of the ancient and modern Celt," published in this journal in 1864, whereas Mr. Pike's "*English and their Origin*" did not appear till 1866. We cannot, indeed, do better than quote Mr. Pike himself in proof of this. In discussing the relative proportions of the average German and English head, he refers to the uniform experience of the hat manufacturer; and then adds, in the note already referred to:

"Since this portion of the Essay (*i. e.* his, *English and their Origin*) was written," the above named paper has appeared in the *Anthropological Review*. "It fully confirms all that has been above stated with respect to the difference between English and German heads." Mr. Pike's reference is equally candid and courteous; and we should not have thought of pointing out that the confirmation of opinions already published in 1864, must be ascribed to him, not to us, were it not for such absolute claims to novelty and originality, incident, perhaps, to the necessities of a Chancery suit. But our first appeal to the special test referred to is of much earlier date, and then explicitly refers to the very point in question, viz., the contrast between the short German and long British head. For example, in treating of "Ethnical forms and undesigned artificial distortions of the Human Cranium," (*Can. Jour.*, Vol. VII., p. 414, Sept., 1862), it is remarked: "My attention was originally directed to this familiar test [viz., hat manufacturers' shapes] by a remark of the late Dr. Kombst, that he had never been able to obtain an English-made hat that would fit his head. He added that he believed such was the general experience of Germans, owing to the greater length of the English head. I subsequently found the shapes of a Yorkshire hatter to be shorter than some furnished me from Dublin; and I believe that such comparisons of the shapes most in demand in different parts of the British Islands and on the Continent, will supply important craniological results. Dr. Nott has employed the same means in his 'Comparative Anatomy of Races,' but only as a test of relative horizontal circumference."

Again, in the later paper of 1864, this occurs: "One extensive hat manufacturer in Edinburgh states that the Scottish head is decidedly longer, but not so high as the English. In comparison with it the German head appears almost round."

When Mr. C. Carter Blake set forth in evidence, as one of Mr. Owen Pike's contributions to ethnology, the deduction that "The English are descendants of the ancient Britons," it is to be presumed that he meant no more than Mr. Pike himself repeatedly indicates, namely, the predominance of the British as compared with the Anglo-Saxon element. He remarks, for example, (*English and their Origin*, p. 46), "We know from the laws of Ine, that there was a British population dwelling among the Saxons, and that its position was not very inferior to the position of the Saxons themselves. But in addition to these Saxonised British landowners, there must have been a considerable

number of captives belonging to the Lloegrian and other British tribes, all of whom helped to increase the proportion of British as compared with Saxon blood. And still further there must have been a number of Saxo-Britons of the half-blood, some at least of whom would have the full privileges of Saxons." Again he says: (*Ibid*, p. 165) "It cannot be so readily admitted that the longer skulls belonged to the Anglo-Saxons of pure breed. Many of them are the skulls of women, who may have been the British wives of Saxon settlers. Without confirming evidence of some kind, it cannot be allowed that a skull found in an Anglo-Saxon burying-place is the skull of an Anglo-Saxon of pure blood." So writes Mr. Pike, in 1866; but in 1863, in discussing the very subject of the form of the British skull, we remarked: (Prehistoric Annals of Scotland, 2nd Ed., Vol. I., p. 278). "The insular Anglo-Saxon race in the Anglian and Saxon districts, deviates from its continental congeners, as I conceive, mainly by reason of a large inter-mixture of Celtic blood, traceable to the inevitable intermarriage of invading colonists, chiefly male, with the British women. But if the Celtic head be naturally a short one, [as affirmed by certain authorities], the tendency of such admixture of races should have been to shorten the hybrid Anglo-Saxon skull, whereas it is essentially longer than the continental Germanic type." Nor is this idea of the modern Briton being the representative of the Teutonic, no less than the Celtic races of early centuries, a novelty of recent date. In the first edition of the above work, (1851, p. 353), the Celtic races are spoken of as "once more nomade, or mingling their blood with the more civilised tribes which are gradually securing a footing in the south-eastern portions of the island. The first stream of Teutonic colonization had set in, which, followed successively by the Romans with their legions of foreign auxiliaries, by Saxons, Angles, Scoti, Norwegians, Danes, and Normans, produced the modern hardy race of Britons."

The same argument is thus repeated in this journal: (Vol. IX., p. 379, 1864). "The Anglo-Saxon cannot be affirmed to be a pure race. Apart from later Danish, Norse and Norman intermixture: it differs mainly, as I conceive, from its Germanic congeners, by reason of a large admixture of Celtic blood, traceable primarily to the intermarriage of Anglian and Saxon colonists with British women. Such a process of amalgamation is the inevitable result of a colonisation chiefly male, even where the difference is so extreme as between the white and the red or black races of the New World. But the Anglo-Saxon intruder

and the Native were on a par physically and intellectually; and while the former was preëminent in all warlike attributes, the latter excelled in the refinements of a civilisation borrowed both from the pagan Roman and the Christian missionary. There was nothing therefore to prevent a speedy and complete amalgamation. But if this was an admixture of a dolichocephalic with a brachycephalic race, the result should be a hybrid skull of intermediate form; whereas the modern Anglo-Saxon head is essentially longer than the continental Germanic type." That the immediate source of this long head-form is native, *i. e.*, British, is the aim of the whole argument. After marshalling a variety of evidence, in proof of a long head being characteristic alike of the ancient Gaul and Briton, the result, so far, is thus summed up: "It accordingly appears, thus far, from the various authorities referred to, that considerable unanimity prevails in the ascription of an excess of longitudinal diameter as one of the most marked characteristics of the Celtic cranium. A long but low frontal development, in which, as M. Pruner-Bey defines it, 'The forehead of the ancient Celt gains in length what it loses in height;' a flattening of the parietals, and a tendency toward occipital prolongation, are all more or less strongly asserted as characteristic of the same head-form."

The conflicting evidence is next produced, and by treating the native element as the unknown quantity, in relation to results following from the assumed amalgamation of pre-Celtic and post-Roman races with the population on which the Romans intruded, this result is arrived at: "It thus appears that where the Celtic element most predominates, the longer form of head is found. It is also noticeable that there are indications of the Gaelic and Erse type of head being longer than the British. The results, as a whole, of the classification of the known and unknown elements in tabular form, appear to involve the assignment of dolichocephalic characteristics to the undetermined Celtic element both of the French and English head."

This forms the natural sequence of ideas involved in another ethnical proposition: that of absorption as contra-distinguished from absolute extirpation of races. This idea, suggested in different aspects, in relation to other propositions, is thus summed up in my *Prehistoric Man*: (1st Ed., 1862, Vol. II., p. 340). "From all this it would seem to be justly inferred that ethnological displacement and extinction must be regarded in many, probably in the majority of cases, not as amounting to a literal extirpation, but only as equivalent to absorption. Such

doubtless it has been to a great extent with the ancient European Celtæ, notwithstanding the distinct historical evidence we possess of the utter extermination of whole tribes both of the Britons and Gauls by the merciless sword of the intruding Roman." In this sense I believe that, what is witnessed in actual process of accomplishment on this continent, where a certain percentage of "Red" blood is being taken up by the so-called "Anglo-Saxon" of the New World, has been the law within ancient historic areas; and that their modern occupants are, to some extent, the sum of all the ethnic elements that have seemed to displace each other in the long march of ages since the night of time.

This is a proposition directly conflicting alike with ideas embodied in Dr. Knox's favourite proposition, that "Race is everything," and with that of Professor Agassiz of "the close connection between the geographical distribution of animals and the natural boundaries of the different races of men." Do races ever amalgamate? Does a mixed race exist? are questions put by Dr. Knox, in order to be answered unhesitatingly in the negative. To me it rather seems that the question submitted to the ethnologist, at least within the whole historic area, is this: Does any unmixed race exist? Has any seemingly extinct race passed away, leaving no transmitted trace, or taint of blood to its successors? Hence, when treating of allophylian precursors of the historic races of Britain, I remarked, in a passage, subsequently adopted by Dr. J. Barnard Davis as the motto for his prospectus of the *Crania Britannica*: (*Prehist. Annals*, 1st Ed., p. 193, 1851). "They are our ancestry, even though we may question our lineal descent; our precursors, if not our progenitors. From them we derive our inheritance and birthright; nor, among all the later mingling of races, can we assume that no drop of their blood mingles in our veins."

Let us then consider the various points embodied in the statement made by Mr. C. Carter Blake as to claims of originality, and priority of publication, in reference to certain ethnical British characteristics.

(1) "The fact that the modern English possess long skulls was first established by the plaintiff," viz., in 1866. But in 1864, we had already published this statement: "Amid considerable diversity in minute characteristics, the English heads appear to be divisible into two classes, of which one, characterised by great length, and slight excess of breadth in the parietal as compared with the frontal region, appears to be the Anglo-Saxon head; the other, also long, but marked by a sudden tapering in front of the parietal protuberances, and a narrow

prolonged frontal region, is the insular Celtic type." Mr. Pike, it may be added, does not assert an invariable uniformity in the English head-form. His own independent observations have been numerous, and extended over a wide area; and necessarily precluded any such hypothetical generalisation. He refers, for example, to Wiltshire as presenting the longest type of head; to a variety of types met with in Wales; and to the predominance of "the Cymric type," meaning thereby, however, not Welsh, but originally native to those countries from whence the Cymri came; and so asserts: "it is certainly to one branch of the Cymric stock that we owe the chief characteristic of our English heads." Whilst, however, Mr. Pike repeatedly guards against the assumption that the word "Cymric" is used as synonymous with Welsh, he defines among the results determined by his study of physical characteristics: "That all the evidence which has been collected shows the Cymric skull to be the long oval form, but slightly longer in proportion to its breadth than the typical English skull; that the ancient Britons were remarkable for their lofty stature, no less than the modern English; and that this lofty stature is especially found among the most Celtic population of the West."

(2) Mr. C. C. Blake proceeds: "The plaintiff had first combined the propositions that the Celtic skull was long, that the Teutonic skull was short, that the modern English skull is long, and that, therefore, the English are the descendants of the ancient Britons." (1866). But in 1863, I had ascribed to the brachycephalic crania of British tumuli, assumed by Dr. J. B. Davis to be Celtic, "an Allophylian, perhaps a Turanian" origin; (*Prehist. Annals*, Vol. I., p. 277); had shown that, while many skulls of the Anglo-Roman period approximate to this type, "on the other hand, the predominant skull-forms of the modern Welsh, the Highlanders of the most purely Celtic districts of Scotland, and the seemingly unadulterated population of the south-west of Ireland," all differ from that type; had quoted Retzius as to the prevalence of the very long head-form in England proper, as well as in Wales, Scotland and Ireland; and then followed it up by the passage already given, asserting that the Anglo-Saxon deviates from the continental Germanic type by reason of a large intermixture of native blood, traceable to British mothers. Again, when selecting examples of crania derived from the earliest native Christian cemeteries in the purely Celtic or Pictish regions of Scotland, I remarked: "even if allowance be made for considerable admixture with other races, Roman,

Saxon or Danish, still a general approximation to the native type-form, and its frequent reappearance in full development, are to be looked for." When specially discussing the cranial characteristic of the British and Gaulish Celt, (*Canadian Journal*, Vol. IX., p. 401, 1864), "that the Teutonic skull was short," is asserted, when discussing the very question of that Teutonic element affecting the native Celtic one; and, what is meant by "Celtic" and Teutonic or "Germanic," is thus defined: "Of the Germanic elements the Saxon is exclusively English; the Anglian, and apparently the Frisian, Scottish. Of the Scandinavian elements, the Danish predominates in England, the Norwegian in Scotland; and the latter was very slightly affected by any Norman element." Bearing this in view, the proposition of determining the Celtic element by comparison of the modern head-form and the diverse types traceable to the various native and immigrant races, is thus tested in relation to the Teutonic skull: "Taking the known elements as our guide: if all but the Celtic form can be determined, there can be no insurmountable difficulty in ascertaining its type. Assuming the modern German head as a key to the influences of Frank and other Germanic intermixture, it is decidedly shorter and more globular than the Anglo-Saxon head." The very latest of those results, let it be observed, were published in 1864; and cannot therefore be properly said to confirm others which did not make their appearance till 1866; though they are undoubtedly confirmed by them.

Without, therefore, doubting in any degree Mr. Luke Owen Pike's statement in court, that "he had devoted much labour, time and expense in collecting evidence for his argument from physical characteristics, which, whatever might be its value, he believed to be original;" we may be permitted also to lay claim to the devotion of much labour, time and expense, with ends in view, in many respects similar; and to priority in the publication of results, in so far as they approximate to one another.

The forms of head characteristic of diverse races present at successive eras in Britain, long constituted a favourite subject of research with me, as one means calculated to throw light on periods anterior to written history. The earliest results of such investigations were brought under the notice of the British Association for the Advancement of Science, in 1850, in a communication entitled an "Inquiry into the evidence of the existence of Primitive Races in Scotland prior to the Celtæ." In this I, for the first time, asserted the existence of an early

race, prior to the Brachycephalæ of the ordinary tumuli, for which I suggested the term Kumbecephalic, from their long, boat-shaped head. The evidence was subsequently challenged as inadequate to sustain so comprehensive a conclusion. But further proofs tend to confirm it; and since that date all faith in the Celtæ being the primeval occupants of Britain has been effectually shaken by the disclosures of traces of Drift-folk, and other primevals, compared with whom British Celts are modern enough.

Removal from the scenes of such explorations among Britain's prehistoric traces prevented my following out the archaic researches referred to, to their legitimate results. But materials are accessible enough in Canada and the United States for pursuing the inquiry into the characteristic type, or types of the modern British head; and in 1864 I was able to publish the conclusions, to which further observation has lent additional confirmation: that, amid many subvarieties to be found in the prevalent head-forms of the British Islands, the long British head is divisible into two sub-types, one of which is characterised by comparatively slight and gradual narrowing, in passing from the parietal to the frontal region, and with good elevation in the latter; while the other passes somewhat abruptly from a wide parietal to a narrow, more elongated, and depressed frontal region, in which the loss in breadth and height is compensated for by the greater length. But in numerous examples the two types are so interblended as to confirm the idea of a far greater interfusion of Saxon and Celtic blood, than the popular use of the distinctive terms implies. During the past winter (1868-9) I had an opportunity of testing, by means of the conformateur, the head-forms of a whole battery of Artillerymen recruited in England. The prevalent form was a long oval, with some variations towards the narrower and longer frontal region; but there was no well-defined predominance of any single uniform shape; no determinate Anglo-Saxon or Celtic type; but intermediate forms, with greater or less preponderance of one or the other characteristic.

In seeking to determine both the sources and predominant character of British head-forms, the labours of French ethnologists contribute valuable aid. It is not merely that we recognise the Celtic element as common alike to France and England: Briton and Breton; Gael and Gaul; Frank, Anglo-Saxon, Dane and Norman: have all contributed —though in very diverse degrees,—to mould the race and history of both countries. Hence any carefully conducted researches which fur-

nish materials for comparison between the prevalent head-forms of the two countries are valuable, as means towards determining the constancy of ethnical type-forms, or the degree and rate of change which they undergo under certain well defined circumstances, and within a known period. The elaborate tables of measurements of Parisian crania selected by Dr. Spurzheim as characteristic examples of the French Celtic head, appeared to me, accordingly, calculated to furnish a contribution of some value to the comparative craniologist. But their minuteness has defeated the purpose I entertained of adding the whole as an appendix to this paper. After preparing them for the press, the space required has proved to be much larger than could be spared for a subject of limited interest, especially when presented in a tabular form.

As a contribution to minute craniometry, Dr. Adam's elaborate tables would, I doubt not, have been welcomed by those who have devoted special attention to this department of ethnical study. But the system on which they are based is set forth sufficiently clearly in previous pages; and the details already selected for comparison with other tables of cranial measurements furnish some illustration of the results. To those I now add another selection of a different character.

No mode of comparison brings out more clearly some of the most important differences in skull-forms, alike in diverse races of men, and in the lower animals, than viewing them on the base. Professor Owen long since demonstrated the value of this method. Dr. Prichard illustrates it in his "Researches" by presenting such a drawing of the skull of one of Napoleon's guards, killed at Waterloo, in juxtaposition with those of a pure blood Negro, an Esquimaux, and an Orang, (*Simia satyrus*). The illustrations of the "Crania Britannica" also include similar full size views of a British skull, from a barrow on the Yorkshire Wolds; an Anglo-Saxon skull from a barrow on the Sussex Downs; and a Roman skull—that of Theodorianus,—from an inscribed sarcophagus at York. Dr. Davis remarks of the last: "The foramen magnum is 1.4 inch in its longitudinal diameter, and an inch across its middle,"—in this respect, exceeding in length, but falling considerably short of the mean breadth of apperture, as shown in the fifteen male Parisian crania of the following table. But the whole contour of the Roman skull when seen in this aspect is compact, and uniformly balanced, as compared with either of the others; and especially when viewed alongside of the Anglo-Saxon one, its greater posterior development is very remarkable.

The position of the great occipital foramen in man bears an important relation to his whole structure, and the upright attitude which is natural to him. In the enormous development of the spinous processes of the Gorilla, for example, as compared with the comparatively slight vertebral column, on which the human skull, with its greater cerebral mass rests, we see the totally different functions of the climbing anthropoid and of man; and the same is illustrated by the relative position of the occipital foramen in the two. In this, indeed, as in other respects, the Gorilla diverges more remotely than others of the anthropoids, from man. But as compared with any ape or other animal which may be selected as the most nearly approaching to him in structure, the space between the occipital foramen and the extreme posterior point of the skull in man is great; while in most animals, as the horse, dog, sheep, and even in the howler monkey, (*Mycetes seniculus*), there is no space behind the foramen. In the highest type of man, the lofty and amply developed forehead is the characteristic feature; but the point in which his cranium is most notably distinguished from that of the brute is the occiput, with its corresponding cranial cavity and great posterior mass of brain.

The dimensions of the occipital foramen have already been adverted to. Its relative size in different races of men long since attracted the notice of the comparative anatomist. But indeed the dimensions of all the foramina of the skull invite attention, when instituting comparisons between crania of diverse races. The various nerves issuing from them are asserted by more than one competent observer to have been found thicker and stronger in the Negro than the European; whereas, on the contrary, the occipital foramen of the Negro cranium has been repeatedly noted as smaller.

I have accordingly selected from Dr. Adam's tables those measurements which determine the size of the occipital foramen, and its relations to other parts of the cranium. Comprehensive, however, as his measurements are, no attempt has been made to determine the relative positions of the zygomata and occipital foramen; though the place of the zygomatic arch in the basis cranii in man is only less characteristic than that of the great foramen. In man, the entire zygoma is included in the anterior half of the base of the skull; whereas in the Baboon, Orang and Gorilla, it occupies the middle region, and from its greater development, measures fully a third of the whole antero-posterior diameter. The dimensions of the zygoma in each of the Parisian crania are minutely given; but they are not, in themselves, of sufficient

importance to be reproduced, apart from other measurements necessary to determine their relative value in reference to the whole dimensions of the head. But Dr. Adam has aimed, in Nos. 25, 26, at indicating the position of the zygomata, by ascertaining the place of each in relation to the stylo-mastoid foramen on the same side of the cranium. Those measurements are accordingly included in the following tables. In them, as in others of the measurements, the two columns represent the proportions of corresponding features on the two sides of the crania; and in so far as they differ, they indicate unsymmetrical development. This is proved to be the case in the majority of crania subjected to the test; and confirms the opinion I have already deduced from extensive observations, that a perfectly symmetrical human head, in which the one hemisphere is the exact counterpart, or reverse of the other, is a rare exception, rather than the rule.

Reference to the details of Dr. Adam's system of measurements, as given on previous pages, with their corresponding numbers, will enable the reader to follow him in the few results selected here in their relation to the general system embraced in his comprehensive series. I have retained the order in which he has placed the crania, irrespective of their numbers; and also the spaces that occur in his tables. Possibly Parisian Anthropologists may be able, by reference to the originals, to perceive some reason for the subdivisions of the male and female groups, as indicated by such interruption of the continuity of the columns of figures. I have assumed the second group to be female crania, for reasons already assigned; and have added to each table the mean results and also the total mean of the two combined.

The measurements selected are: 7. From the inial margin of the foramen spinale to the coronal point of the occipital bone. 8. From the same to the meeting of the coronal and sagittal sutures. 11. From the glabellar margin of foramen spinale to the coronal point of the occipital bone. 13. From the same to the meeting of the coronal and sagittal sutures. 18. From the same to the inial sinuous margins of palatal bones. 25. From glabellar surface of right zygomatic enclosure to inial surface of right stylo-mastoid foramen. 26. From left do. to left do. 62. Distance between glabellar and inial margins of foramen spinale. 63. Distance between lateral margins of do.

MEASUREMENTS OF PARISIAN CRANIA.

MALE CRANIA.

No.	7	8	11	13	18	25	26	62	63
37	3.13	5.53	3.93	5.10	1.54	2.71	2.70	1.44	1.20
29	3.70	5 50	4.10	4.71	1.76	2.64	2.67	1.25	1.17
4	3.84	5.86	4.06	5.05	1.80	2.86	2.97	1.42	1.24
36	3.60	5.70	4.10	5.23	1.86	2.84	2.82	1.26	1.09
27	3.66	5.90	4.27	5.28	1.46	2.50	2.50	1.23	1.17
25	3.70	6.20	4.40	5.66	1.80	2.90	3.00	1.48	1.26
2	4.03	6.30	4.50	5.67	2.00	2.97	2.86	1.42	1.20
9	3.30	5.55	4.25	5.30	1.55	2.52	2.52	1.43	1.18
5	3.73	5.86	4.40	5.48	1.76	2.82	2.65	1.27	1.15
50	3.80	6.12	3.92	5.11	2.05	2.92	3.02	1.36	1.22
39	3.60	5.60	4.05	5.01	1.77	2.82	2.84	1.26	0.99
41	3.64	5.60	4.30	5.06	1.80	2.78	2.76	1.28	1.17
34	3.72	5.72	4.43	5.40	1.77	2.74	2.76	1.90	1.20
23	3.80	5.77	4.64	5.42	1.74	2.80	2.72	1.24	1.07
7	3.90	5.94	4.70	5.43	1.76	2.70	2.73	1.36	1.18
Mean.	3.68	5.81	4.27	5.26	1.76	2.77	2.77	1.37	1.17

FEMALE CRANIA.

No.	7	8	11	13	18	25	26	62	63
15	3.47	5.25	4.23	4.75	1.44	2.40	2.40	1.33	1.18
31	3.72	5.24	4.35	4.70	1.70	2.80	2.80	1.30	1.07
1	3.62	5.40	4.40	5.00	1.82	2.97	2.94	1.28	1.12
26	3.28	5.27	4.07	4.80	1.52	2.62	2.58	1.36	1.15
12	"	"	3.86	4.80	1.70	2.73	2.71	"	"
16	3.66	5.63	4.50	5.24	1.65	2.66	2.64	1.29	1.00
13	3.73	5.36	4.33	4.77	1.60	2.64	2.64	1.20	1.20
22	3.60	5.70	4.40	5.32	1.64	2.65	2.80	1.26	1.06
40	3.42	5.10	4.25	4.72	1.86	2.83	2.80	1.22	0.99
32	3.62	5.17	4.37	4.77	1.70	2.84	2.87	1.29	1.08
38	3.80	5.74	4.52	5.17	1.85	2.88	2.88	1.32	1.13
3	3.80	5.23	4.62	4.66	1.61	2.43	2.58	1.30	1.14
8	3.25	5.20	3.75	4.53	1.68	2.38	2.43	1.21	1.00
Mean.	3.58	5.36	4.28	4.86	1.67	2.68	2.70	1.28	1.09

TOTAL MEAN, MALE AND FEMALE.

	7	8	11	13	18	25	26	62	63
	3.634	5.609	4.275	5.076	1.721	2.727	2.735	1.332	1.1 34

The illustrations selected in the above tables from the very elaborate series of measurements, of which the system has been detailed in previous pages, will suffice meanwhile to illustrate the character of the whole. Still further, the details previously furnished may serve as a contribution towards the determination of the most reliable and useful data for a comparative system of craniometry. If by means of a uniform system we were enabled, through the independent labours of competent observers in various parts of the world, to accumulate a large amount of such minute measurements, in relation to the crania of specific races, or of well-defined regions, so as to admit of a comparison of results: we should, at least, ascertain thereby how far the mean results in relation to each helped to exhibit any notable specialities. By such means we might hope to eliminate from the whole certain constants presenting a specific ethnical significance. We can scarcely fail, at least, to determine thereby how far the expression of head-forms, by means of measurements, tends to exhibit the specialities of the individual skull, or to reveal the cranial characteristics of diverse races of men.

ON THE CHANGES OF BAROMETRIC PRESSURE, AND PRESSURE OF VAPOUR THAT ACCOMPANY DIFFERENT WINDS, AT TORONTO,

FROM OBSERVATIONS IN THE SEVEN YEARS, 1860-66 INCLUSIVE.

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The object in the following paper is to shew the connection which subsists between the direction of the wind and the rapidity of the changes, whether of increase or diminution, which take place in the pressure of air and of vapour.

The changes considered in the investigation are limited to those in which the direction of the wind did not vary between two consecutive

observations by more than 22½° on each side of one of the eight principal points; and as such comparative constancy in direction will usually occur only when the interval is short, it was found convenient to employ only the differences between 6 a.m. and 8 a.m., between 2 p.m. and 4 p.m., and between 10 p.m. and midnight.

The total change in the reading between two consecutive observations being first diminished by the change due to diurnal variation, the remainders were then classed according to the direction of the wind in the interval, and their averages in each class taken, for the year collectively as well as separately for the two half-years.

The average changes of barometric pressure which take place in two hours, and found in the manner just described, are given below for each of the principal eight point of the wind's direction.

APRIL TO SEPTEMBER.

N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
+·0085	—·0043	—·0113	—·0057	—·0084	—·0041	+·0132	+·0150

OCTOBER TO MARCH.

N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
+·0037	—·0160	—·0334	—·0313	—·0222	—·0037	+·0168	+·0209

THE YEAR.

N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
+·0086	—·0103	—·0215	—·0164	—·0129	—·0039	+·0156	+·0180

The most probable values of the changes corresponding to intermediate directions of the wind are given by the following formulæ, where Ψ_1 Ψ_2 Ψ_3 represent the changes for the two half years and year, and θ the angular distance of the point from which the wind blew, measured from the North towards the East, end expressed in degrees.

APRIL TO SEPTEMBER.

$$\Psi_1 = +\cdot0004 + \cdot0125 \sin(\theta + 141^\circ 29') + \cdot0044 \sin(2\theta + 186^\circ 29') + \cdot0025 \sin(3\theta + 14^\circ 2')$$

OCTOBER TO MARCH.

$$\Psi_2 = -\cdot0075 + \cdot0281 \sin(\theta + 148^\circ 14') + \cdot0024 \sin(2\theta + 160^\circ 49) + \cdot0014 \sin(3\theta + 30^\circ 15')$$

THE YEAR.

$$\Psi_3 = -\cdot0028 + \cdot0195 \sin(\theta + 148^\circ 2') + \cdot0040 \sin(2\theta + 174^\circ 17') + \cdot0021 \sin(3\theta + 10^\circ 47)$$

PRESSURE OF DRY AIR.

The average changes in the pressure of dry air in two hours with different winds, and the corresponding formulæ of interpolation, are as follows.

APRIL TO SEPTEMBER.

N.	N.E.	E.	S.E.	S.	S.W.	N.	N.W.
+·0146	—·0009	—·0128	—·0088	—·0122	—·0046	+·0195	+·0219

OCTOBER TO MARCH.

N.	N.E.	E.	S.E.	S.	S.W.	N.	N.W.
+·0110	—·0182	—·0371	—·0342	—·0240	—·0026	+·0195	+·0240

THE YEAR.

N.	N.E.	E.	S.E.	S.	S.W.	N.	N.W.
+·0128	—·0091	—·0243	—·0194	—·0160	—·0034	+·0195	+·0229

APRIL TO SEPTEMBER.

$$\Psi_1 = +\cdot0021 + \cdot0182 \sin(\theta + 135^\circ 13') + \cdot0048 \sin(2\theta + 193^\circ 10') + \cdot0034 \sin(3\theta + 10^\circ 18')$$

OCTOBER TO MARCH.

$$\Psi_2 = -\cdot0077 + \cdot0317 \sin(\theta + 149^\circ 4') + \cdot0080 \sin(2\theta + 156^\circ 2') + \cdot0016 \sin(3\theta + 217^\circ 29')$$

THE YEAR.

$$\Psi_3 = -\cdot0021 + \cdot0237 \sin(\theta + 144^\circ 46') + \cdot0040 \sin(2\theta + 174^\circ 17') + \cdot0026 \sin(3\theta + 15^\circ 39')$$

PRESSURE OF VAPOUR.

The average changes in the pressure of vapour in two hours that accompany winds from the eight principal points, and the formulæ for finding the most probable change, with the wind blowing from any intermediate point, are given below :

APRIL TO SEPTEMBER.

N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
—·0057	—·0034	+·0020	+·0035	+·0042	+·0001	—·0073	—·0069

OCTOBER TO MARCH.

N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
—·0025	+·0009	+·0087	+·0031	+·0017	—·0013	—·0032	—·0039

THE YEAR.

N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
—·0041	—·0012	+·0025	+·0034	+·0034	—·0007	—·0046	—·0054

APRIL TO SEPTEMBER.

$$\Psi_1 = -\cdot00169 + \cdot00607 \sin(\theta + 305^\circ 49') + \cdot00096 \sin(2\theta + 88^\circ 48') + \cdot00110 \sin(3\theta + 181^\circ 2')$$

OCTOBER TO MARCH.

$$\Psi_2 = -\cdot00018 + \cdot00335 \sin(\theta + 330^\circ 26') + \cdot00034 \sin(2\theta + 287^\circ 6') + \cdot00022 \sin(3\theta + 243^\circ 26')$$

THE YEAR.

$$\Psi_3 = -\cdot00084 + \cdot00479 \sin(\theta + 312^\circ 43') + \cdot00035 \sin(2\theta + 86^\circ 44') + \cdot00037 \sin(3\theta + 216^\circ 15')$$

If in the nine foregoing formulæ, the variable angle (θ) be made equal in succession to 0, 11° 15′ (11° 15′)×2, (11° 15′)×3, &c. &c. ..... (11° 15′)×31, the changes of pressure will be found which

would most probably occur if the wind were to blow steadily for two hours from each of the thirty-two points of the compass.

The results are given in the annexed Table.

Table shewing the changes in Barometric Pressure, Pressure of Dry Air, and Pressure of Vapour, which take place in two hours, during winds from each of the Thirty-two points of the Compass.

	Barometric Pressure.			Pressure of Dry Air.			Pressure of Vapour.		
	April to Sept.	Oct. to March.	Year.	April to Sept.	Oct. to March.	Year.	April to Sept.	Oct. to March.	Year.
North	+·0083	+·0088	+·0083	+·0144	+·0110	+·0127	—·0057	—·0026	—·0042
N b E	+·0058	+·0035	+·0044	+·0117	+·0046	+·0083	—·0056	—·0019	—·0037
N N E	+·0029	—·0026	—·0001	+·0082	—·0027	+·0032	—·0052	—·0010	—·0030
N E b N	—·0005	—·0092	—·0050	+·0040	—·0105	—·0027	—·0045	·0000	—·0021
N E	—·0041	—·0158	—·0100	—·0007	—·0182	—·0088	—·0034	+·0010	—·0011
N E b E	—·0074	—·0220	—·0146	—·0054	—·0252	—·0146	—·0020	+·0019	·0000
E N E	—·0099	—·0272	—·0184	—·0093	—·0309	—·0195	—·0005	+·0027	+·0009
E b N	—·0112	—·0310	—·0208	—·0120	—·0349	—·0228	+·0009	+·0033	+·0017
East	—·0113	—·0334	—·0218	—·0131	—·0372	—·0244	+·0020	+·0036	+·0024
E b S	—·0103	—·0343	—·0214	—·0127	—·0379	—·0243	+·0028	+·0037	+·0028
E S E	—·0086	—·0340	—·0199	—·0114	—·0373	—·0230	+·0032	+·0037	+·0032
S E b E	—·0068	—·0329	—·0180	—·0098	—·0359	—·0211	+·0034	+·0035	+·0034
S E	—·0055	—·0312	—·0160	—·0086	—·0341	—·0192	+·0035	+·0032	+·0036
S E b S	—·0052	—·0293	—·0147	—·0084	—·0321	—·0178	+·0036	+·0029	+·0037
S S E	—·0058	—·0273	—·0132	—·0093	—·0298	—·0170	+·0039	+·0025	+·0037
S b E	—·0071	—·0250	—·0134	—·0109	—·0272	—·0166	+·0041	+·0021	+·0036
South	—·0085	—·0222	—·0131	—·0124	—·0239	—·0161	+·0042	+·0016	+·0033
S b W	—·0093	—·0187	—·0123	—·0131	—·0199	—·0149	+·0040	+·0010	+·0027
S S W	—·0090	—·0145	—·0106	—·0122	—·0149	—·0124	+·0032	+·0003	+·0018
S W b S	—·0071	—·0094	—·0077	—·0093	—·0090	—·0086	+·0019	—·0004	+·0007
S W	—·0038	—·0037	—·0036	—·0044	—·0027	—·0033	+·0001	—·0012	—·0006
S W b W	+·0005	+·0022	+·0014	+·0018	+·0038	+·0028	—·0021	—·0019	—·0019
W S W	+·0052	+·0079	+·0066	+·0084	+·0099	+·0091	—·0042	—·0025	—·0030
W b S	+·0096	+·0129	+·0115	+·0146	+·0152	+·0148	—·0060	—·0029	—·0040
West	+·0131	+·0168	+·0154	+·0195	+·0194	+·0194	—·0073	—·0033	—·0047
W b N	+·0153	+·0196	+·0181	+·0225	+·0223	+·0224	—·0079	—·0035	—·0052
W N W	+·0162	+·0211	+·0194	+·0237	+·0241	+·0239	—·0079	—·0037	—·0054
N W b W	+·0160	+·0214	+·0194	+·0234	+·0247	+·0259	—·0075	—·0038	—·0054
N W	+·0151	+·0208	+·0184	+·0222	+·0242	+·0230	—·0069	—·0038	—·0053
N W b N	+·0137	+·0191	+·0167	+·0204	+·0227	+·0213	—·0063	—·0037	—·0051
N N W	+·0121	+·0166	+·0144	+·0186	+·0200	+·0190	—·0059	—·0035	—·0049
N b W	+·0103	+·0132	+·0116	+·0166	+·0161	+·0162	—·0057	—·0031	—·0046

By examining the table it will be seen that on the average of the year the barometer rises with a wind from any point between S W b W

(measured from left to right) to N b E, and that it falls with winds from NNE to SW. The same rule also holds (within a point) in summer and winter separately, and is true also with respect to the changes in the pressure of dry air. The pressure of vapour increases with a wind between E N E to SW b S and diminishes with a wind between SW and NE.

On the average of the year, and during the winter half-year, both the rise and fall have an uninterrupted progression; and the same is true in every case where the change is an increase; but in the summer half-year, besides the maximum rate of barometric fall which occurs with a wind from E, there is a second inferior maximum fall when the wind is from S b W. There are also two maxima in the rate with which the pressure of dry air diminishes during the summer. They are of equal magnitude — ·0131 and also occur with winds from E and S b W.

The most rapid changes, together with the winds that accompany them, are shewn in the following tables:

BAROMETRIC PRESSURE.

	SUMMER.		WINTER.		YEAR.	
	Change in 2 hours.	Wind.	Change in 2 hours.	Wind.	Change in 2 hours.	Wind.
Most rapid rise	+·0162	WNW	+.0214	NWbW	+·0194	NWbW½W
Most rapid fall	—·0113	E	—·0343	EbS	—·0218	E
	—·0093	SbW				

PRESSURE OF DRY AIR.

	SUMMER.		WINTER.		YEAR.	
	Change in 2 hours.	Wind.	Change in 2 hours.	Wind.	Change in 2 hours.	Wind.
Most rapid rise	+·0237	WNW	+·0247	NWbW	+·0239	NWbW½W
Most rapid fall	—·0131	E	—·0379	EbS	—·0244	E
	—·0131	SbW				

PRESSURE OF VAPOUR.

	SUMMER.		WINTER.		YEAR.	
	Change in 2 hours.	Wind.	Change in 2 hours.	Wind.	Change in 2 hours.	Wind.
Most rapid rise	+·0042	S	+·0037	EbS½S	+·0037	SSE½E
Most rapid fall	—·0079	WbN½N	—·0038	NW½W	—·0054	NWbW½W

HIGHER EDUCATION FOR WOMAN.

An address on higher education, inaugurating a series of lectures designed for ladies, was delivered by Professor Wilson, of University College, in the Music Hall, Toronto, on Friday, the 22nd October; and as it marks the commencement of a movement which, if carried out in the spirit in which it has been begun, is fraught with results of the highest importance, not only to this Province but to the whole Canadian Dominion, we have thought it well to give it permanent record in this journal. The gentlemen who have undertaken to conduct this first experimental course, preparatory to the organization of a permanent scheme on a more extended scale, should the results hold out any adequate encouragement for such a procedure, are Professors J. B. Cherriman, M.A., and D. Wilson, LL.D., of University College, and Professor Geo. P. Young, M.A., of Knox's College, Toronto. The result, so far, we may add, has surpassed the expectations of the most sanguine promoters of the movement. Upwards of one hundred and fifty tickets have been taken by lady-students in the three branches of Logic, Astronomy, and English Literature; and the zeal and perseverance manifested by them thus far in those studies, give abundant assurance of success. On the opening day the large lecture-room of the Mechanics' Institute was crowded with an audience composed exclusively of ladies, to whom Dr. Wilson delivered the following address:—

We meet to-day for the purpose of inaugurating a movement which aims at securing for ladies facilities for training in the higher departments of mental culture, in some degree corresponding to those already available for young men. The liberal scale on which this province has provided for education in the higher departments of learning has already won for it an honourble preëminence among the states and provinces of this western hemisphere. But the ample provision thus secured for the training of young men, in letters, science, and philosophy, only renders thereby the contrast more striking and invidious, which leaves to the other sex nothing beyond the Common, and the Country Grammar School. The need of something more cannot be doubted. To what extent the want is as yet felt among ourselves, the present movement is designed in some degree to test. The duty has accordingly been imposed on me of presenting the subject to your notice, with the view of acertaining whether there really exists

among the ladies of Toronto, and of Ontario generally, such a desire for higher culture, and such a willingness to do the work of actual students: not by mere attendance on popular or semi-popular lectures; but by an actual grappling with the difficulties and pleasant toils indispensable to the mastery of all science and true scholarship, as to render it desirable to organize a scheme for their higher education.

Among many signs of the times, we cannot overlook, as a very significant one, the movement in England, the United States, and elsewhere, for what it termed "Woman's Rights." It has been embalmed in the permanent literature of the age in "The Princess" of Tennyson; and enforced anew by the greatest of England's poetesses in her "Aurora Leigh." Amid many follies, inseparable from any great movement, it has its undercurrent of genuine worth, replete with promise for the future. In our own Province it has recently manifested itself in a very practical form, in the successful assertion of equal rights for girls and boys to the advantages of the Grammar Schools; and with that secured, it need not surprise us to find it already being followed up by demands for a share in those higher privileges for which such schools are rightly regarded as preparatory.

At the very initiation of a movement for the higher education of woman, and so for securing for her similar advantages to those enjoyed by young men at Universities, it is important to recognise very clearly all that is implied in the distinction between school and college. It is not the number of pupils that constitutes the difference. The gathering together of scores, or hundreds of boys or girls into one great building, and giving it a high-sounding name,—though sanctioned by decrees of Parliament, or by charter under the Royal sign-manual itself,—will not in any degree help to solve the problem.

A considerable amount of all education must of necessity be acquired arbitrarily, and with, at best, but a negative volition. The child learns that indispensable preliminary to knowledge, the alphabet, without perceiving any utility in its troublesome phonetic symbols; spelling, reading, the multiplication table, and much else follow, and are mastered in like manner, at the dictation of others, with scarcely a thought of any ulterior use to be derived from them. Under the aptest and most gifted instructor the studies of school girls or boys must be carried on in obedience to his will, and guided by his perception of a higher aim, rather than their own. The reasoning faculty, as applied at times by a precocious child to such rudimentary studies, retards instead of accele-

rating progress. It is altogether different with the college student. There that period is assumed to have been at length reached in which mere pupilage is at an end. The change of name from *pupil* to *student* is itself significant of this and much more. To every mind a time at length comes when it passes from the merely receptive to the perceptive stage; the aims and uses of study begin to be clearly recognised; the adaptation of preliminary acquirements as means to a higher end is seen; and a willing hand is reached forth to grasp the keys that are to unlock rich treasures of knowledge.

Whenever this stage of intellectual development has been reached, a change not only in the mode of instruction, but also in its place, its associates, and its teachers, is all-important. The child must quit its cradle, its go-cart, and all other appliances of the nursery, if it would not be retarded in the healthful growth of its limbs. And so it is with the mind. The school room is its fitting nursery, where it, too, developes dormant powers, and learns the use of growing energies, until it claims to stand alone, and to obey its own volitions. Then, the passing from school to college—from halls in which it has been compelled to receive, to those in which it is invited to acquire knowledge,—constitutes in the very change an educational element the importance of which can scarcely be overestimated.

It is in this respect, I believe, fully as much as in any other, that woman's mental culture is inadequately provided for. She is taught by all the conventional usages of society to regard education as a thing incompatible with womanhood. She emerges from the chrysalis state of the school-girl, to "come out" into a world brilliant with flowers, and butterflies, and all the gay realities of a life which recognises no place for intellectual culture. She puts away education with other "childish things;" and, while the young man looks back on college life as the most covetable period of existence; her happiest associations are with the day of her emancipation from school. Nor is this a mere passing fancy. It gives the key to all her conversation, and prompts the style in which she is addressed. In her society good manners forbid the intrusion of the sciences; if letters venture within her hearing, the pedant courteously translates his scraps of Latin for her benefit; the logician styles inconsequential reasoning *Woman's Logic*, and is rewarded with a smile; the mathematician is free to take for granted that in her presence,

"The hard-grained muses of the cube and square are out of season;"

and as for political economy, the "wealth of nations," and the science of government: it is unmannerly to name them in her company. She shrinks from a discussion of those principles on which national freedom depends; and resents the epithet *learned*, as though high mental culture were an unwomanly thing. The young man, on the contrary, is taught to regard the change from school to college as his "coming out," and emerging into manhood. He learns to recognise it in the very transference from the state of pupilage, in which he was compelled to learn, and to learn whatever was prescribed for him: to that student-life in which he is assumed to covet learning for its own sake; is invited to accept the coöperation of tutors to aid him in its mastery; and, to an ever increasing extent, is admitted to exercise an intelligent discrimination in the choice of his studies.

The practical importance of this distinction cannot, I believe, be exaggerated. I am accustomed yearly to watch with interest the commencement of this novel experiment on our University matriculants; and to observe the change when they fairly catch the idea that school-boy life is at an end, and respond to the new incentives which appeal to them for intelligent coöperation in the work of mental culture. From this all-important influence our present system of female education entirely excludes woman. Sooner or later every college student recognizes the change involved in this transitional stage between youth and manhood; learns to "put away childish things;" to become his own instructor; and to perceive that the ablest professor can do no more than supplement his own efforts: co-operate with him in so far as he is himself willing arduously to climb the heights on which alone knowledge is to be won.

Nor is the influence on the teacher to be overlooked. The girl tarries to the close under the care of those who must bend all their faculties to the communication of rudimentary knowledge to the passive, if not the reluctant mind; whereas the boy passes from such instructors to others, not necessarily superior in gifts or acquirements to many who are labouring with devoted zeal in the preparatory stages of youthful culture; but who are elevated into a more genial, and, therefore, a more influential relationship, by learning to regard themselves as fellow-workers with the student: the pilots of a barque manned by willing hearts and hands, eager to urge it onward in a prosperous voyage.

And let me here guard against the assumption that there is anything

in this movement antagonistic to the Ladies' Schools already in existence in our midst. On the contrary, should this scheme succeed, it will give a fresh impetus to the higher branches of education in the schools; and call the best energies of their teachers into play, to train up pupils fitted to take advantage of facilities akin to those now supplied by the Universities for the other sex; and which, by so doing, have already contributed largely to the improvement of the Grammar Schools. A competition among Ladies' Schools, as to which shall turn out the best educated candidates for higher honours, could not fail to react on teachers and pupils with a stimulus wholly wanting at present in our institutions for female education.

It is not, therefore, without reason that complaints are urged of the great disadvantages under which woman labours in relation to all higher culture. It is from no lack of appreciation of the excellence of some of our Ladies' Schools and so-called "Female Colleges," that I affirm the want in Canada, and elsewhere, in the true sense of the term, of any college for ladies, to be one of the greatest impediments to the attainment of high culture by women. The functions of school and college cannot be carried on in combination without grievous injury and impediment to true progress in the higher departments of study. Let us not be deceived by names. The institution may be a mere school, though numbering its pupils by hundreds, and giving them its valediction with honours borrowed from the academic usages of medieval Europe; it may be an excellent college, with no more than ten diligent students toiling willingly, with the aid of their tutors, and leaving at length, neither with diploma of Spinsterhood in Arts, nor any like foolish anachronism; but with the substantial scholarship: wanting which, all University degrees are mere frauds and badges of shame.

Whilst, therefore, we may smile at the pleasant fancy of our Laureate:—

> "Pretty were the sight,
> If our old halls could change their sex, and flaunt
> With prudes for proctors, dowagers for deans,
> And sweet girl-graduates in their golden hair:"

we discern beneath the seeming jest, the real beauty of girl-graduates in whom all that most gracefully adapts itself to the retiring virtues and true modesty of womanhood, shall prove perfectly compatible with the highest mental culture, and a scholarship such as was

no less becoming to the gentle lady Jane Gray, on whom was forced unwillingly the fatal crown, than to the masculine Elizabeth, whose brow it wreathed with a fitness which first taught England how regally woman can reign.

But this you will perceive to be the point to which my argument thus far leads:—If there is a genuine desire for such high culture, it is not to be accomplished by the mere lecturing of Professors to willing audiences. Only in the belief that there are those among you prepared to become fellow-workers with us; and, as true students, to strive for some mastery in those departments of science and literature which have been selected for this first experiment: have my colleagues and myself undertaken, at some sacrifice, the pleasant duty of inaugurating a scheme which has in view greatly more comprehensive results. Nor will I allow myself to believe that while London and Edinburgh, Manchester, Liverpool and Glasgow, already furnish their hundreds of fair students, zealous in the pursuit of higher education, there are not to be found among the ladies of Toronto a sufficient number to encourage us in proceeding with this movement.

Do not be deceived, however, under the idea that a series of popular lectures is aimed at. These also have their legitimate uses and value, like fine music or beautiful statuary; and when, in addition to the refined gratification which they yield, we can reckon up a substantial return of some hundred dollars to one or other of our city charities, their practical value is beyond all dispute. But the present aim is not pleasure; neither is it pecuniary reward; but profit of a strictly educational kind. Apart from those branches of higher education which pertain to purely professional training, we see no reason why liberal provision should be made for stimulating our sons to the acquisition of Ancient and Modern Languages, Mathematics, the Natural Sciences, &c., while our daughters are assumed to have completed all needful culture in the rudimentary acquirements of the school-girl. We propose, accordingly, to try the experiment, on a very limited scale, of inviting ladies to undertake some of those studies which specially belong to a University course. If the plan is ultimately to succeed, a preparatory training must be aimed at in some degree resembling that involved in the requirements of University matriculation: not the least beneficial results of which will be its influence on the curriculum and training of Ladies' Schools. When this stage has been fully reached, lectures will be required, more numerous, and embracing a

much wider field than anything now attempted. Meanwhile, let me invite your attention to our present very limited aim.

It has been decided to provide, during the present season, one brief course in each of the three departments of Literature, Mental Science, and Natural Philosophy. In carrying out this plan, Professor Young proposes to take up Logic, presenting an analysis of Thought, as regulated by its formal laws, and the methods by which it is applied in the process of inductive research, and in the formation of our scientific beliefs. Professor Cherriman has selected Astronomy as one department of the comprehensive scientific studies pursued under his guidance in the University course, which admits of treatment within the brief period you are invited to devote to his lectures. He proposes to deal with the subject, so far as may be, exactly as he would treat it with his regular undergraduate class. Nor can I conceive of a more attractive study. You will tread in the steps of Newton; review the triumphs of Leverrier and Adam,—anticipated by Mary Somerville; —and follow out processes by which the problem of the true arrangement of the universe has been solved, and the combined results of all the progress achieved in Optics, Mechanics, and Mathematics, are brought to bear on those brilliant phenomena of the Heavens which attracted the devout wonder of Hebrew patriarchs and prophets, and baffled the science of Greece's wisest philosophers.

Among old questions which come up for fresh solution under altered circumstances, that one is being presented anew with peculiar force: What is civilization? If it consists in fine architecture, rich dresses, luxuriant viands, and all the material appliances which wealth can furnish, we have no lack of the evidence of high civilization in our midst. But if mental, and not material resources are to furnish the standard of our civilization, it becomes us to bear in memory:—

> "What has tamed
> Great nations; how ennobling thoughts depart,
> When men change swords for ledgers, and desert
> The student's bower for gold."

Yet inevitably, in young countries like this, the whole energies of the community are liable to be absorbed in the working-day business of life. We can scarcely spare, as yet, that leisure class, devoted to study for its own sake. Higher education is apt to assume, accordingly, too professional an aspect. We have as promising a set of young men among our undergraduates as any University could desire. Yet

I may venture to confess that I have often reflected with sorrow, on the contrast with which I was familiar in earlier days, when the young graduates of Edinburgh were to be seen eagerly claiming a share in critical discussions and scientific researches; whilst here, our Canadian Institute languishes in the hands of the same old exotics; and we look in vain for the new generation of scientific labourers, of which the University prize lists seem so full of promise.

It will be mourned over; yet I fear it is inevitable that our best honour men shall desert science and letters; and press on, eager for the prizes in the real battle of life. But if it is premature to look for those evidences of a high civilization which belong to older nations, where the thinker finds his true sphere, and achieves his higher triumphs: there is one respect at least in which our civilization is indisputable, and that is in the position accorded to woman. In her dower-rights, tenure of property, inheritance, and admission to all privileges and duties to which she may fitly aspire, much has been done by the yeomen of Canada, without pretence of chivalry, which neither a Bayard nor a Sidney could surpass. There is no country in the world where woman enjoys more leisure and independent freedom of action, than in this Province: emancipated as she is alike from sordid cares and the oppressive exactions of social conventionalities. If men toil with even undue ardour in the pursuit of wealth, they are well content that sisters, wives, and daughters enjoy its rewards. It is a new social organization in which, unconsciously, is being conferred on woman all which once pertained to the old world's privileged orders. But let us not sacrifice thereby that womanhood which forms the fit counterpart to England's vigorous manhood. Let us not strive, as it sometimes seems to me is the result in neighbouring States, to clothe woman in all that is costly, surround her with all that is attractive and luxuriant, and then leaving her to her own resources, exclaim: "These be the lilies, glorious as Solomon's: they toil not, neither do they spin!" May we not rather look to you for the true leisure class, for whom the great world of thought lies invitingly open as your legitimate sphere?

I see in this, bright hopes for the future. A class of highly educated women in our midst would do more to elevate the tone of feeling, and to awaken nobler aspirations in the intellectual manhood of this young country, than anything else I can conceive of. I see no other means in any degree equally calculated to wean our young men of high

promise from the enslavement of professional pursuits: the mere trading drudgery—whether it be of commerce or medicine, of the counting-house or the bar,—which seems now their highest goal.

I have no thought, and equally little fear, of thrusting woman, by such means, out of her true sphere; of obtruding her into arenas which by their very requirements are the prerogative of the rougher sex; or of transforming her into the odious modern ideal of "a strong-minded woman." That is no product of higher education: widening the intellectual horizon, refining and invigorating the mind, and, like the polish of the lapidary, bringing to light all the hidden beauty native to the gem.

> "Let her make herself her own
> To give or keep, to live, and learn, and be
> All that not harms distinctive womanhood.
> For woman is not undeveloped man,
> But diverse. * * *
> Yet in the long years liker must they grow;
> The man be more of woman, she of man;
> He gain in sweetness and in moral height,
> Nor loose the wrestling thews that throw the world.
> She mental breadth, nor fail in childward care,
> Nor lose the childlike in the larger mind;
> Till, at the last, she set herself to man,
> Like perfect music unto noble words."

It is not therefore unmeet, nor in any degree utopian, that we should conceive of a true woman's college rising in our midst, provided not less liberally than those already supplied for the other sex, with professors, apparatus, libraries, and all else needful to enable you to turn to wise account that enviable leisure which you possess to an extent wholly beyond the reach of us, who, whether mechanics, traders, doctors, lawyers, or professors, constitute alike the working classes of this young country.

And if so, then I can look forward, with no ungenerous envy, to the pleasures in store for you: the delight of study for its own sake; the true enjoyment of grappling with some of those higher problems of science which demand patient labour and long research; but bring at length so abundant a reward. I have no fear that such resources will make you less learned in gracious household ways. Such elevated themes are in no degree incompatible with duties daily expected at your hands; nor with the tenderer obligations of care and loving sym-

pathy which are so peculiarly your own. Still less will such elevated themes conflict in any degree with the highest of all duties; or with those earnest and devout thoughts which the study of God's visible universe, or the investigation of the more mysterious realm of mind, is calculated to awaken. When, at length, amid the boundless works of creation, a being was made in the Divine image, gifted with reason, a living soul, he needed a companion of like endowments, that he might exchange with her the first utterances which give audable form to thought. Thenceforth the study of the Creator's works blended with the worship of Himself; nor—when reflecting on the inconceivable vastness of that universe, of which our sun and all its planets are but star-dust; and of the power with which the human intellect grapples with its immensities: weighing the sun, analysing the fixed stars, determining the very chemical elements of the nebulæ, and reducing to law and order the whole phenomena of the heavens;—can I doubt that all which science has mastered is but a page in that ample volume of God's works, on which the purified intellect shall, in a future life, dwell with ever growing delight, and ever ampler recognition of what God's infinitude is.

Such enjoyment of immortal intelligences cannot be incompatible with the devoutest reverence and worship; but will rather fitly form a part of it. Nor need we fear that, here, intellectual culture will prove irreconcilable with the practical ideas and duties of every-day life. God did not make man in his own divine image, only to place him in a world requiring fools for its government. England, the most practical of nations, has also proved herself the most intellectual. Her Bacon and Newton were no cloister-bred dreamers; nor does it surprise us—but, on the contrary, we accept it as the most natural of things,—to find a Derby or a Gladstone, amid the cares of a vast empire, sporting with the toils of highest scholarship; a Herschel stepping down from the lofty abstractions of pure science, to contend with them in the same literary arena; or a Grove or Mill, practically asserting the compatibility of the abstrusest scientific and metaphysical speculations, with their duties to clients in the courts, and constituencies in the legislative council of the nation.

And if it be thus true that an earnest devotion to letters, or the pursuit of some of the abstrusest branches of science, in no degree conflicts with the cares of statesmanship and responsible professional duties: it is an insult to our common sense to tolerate the idea that

the highest mental culture need interfere in any degree with those domestic duties which so gracefully adorn true womanhood.

I have dwelt on this point with some reiteration, because, so far as my experience goes, the sentiments I combat proceed more frequently from the lips of women than of men. There is a kind of conventional talk, not wholly unknown in our own Toronto circles, which speaks, with half a sneer of "wise women," "blue stockings," and the like; but it receives its chief countenance from yourselves. Ladies shrink from the ascription of learning, as though ignorance sat as gracefully on them as modesty, or virtue itself. It rests with you to banish this lingering remnant of medieval barbarism. Frown it down as an insult to your sex; while there lingers on your ear the plaintive close of Browning's noble dramatic lyric, "The Ring and the Book," in which the widowed poet recalls his "Lyric Love," and the rare gold-ring of verse of his poet bride, Elizabeth Barrett Browning: a lady of high scholarship, familiar with the classics of ancient and modern tongues, the greatest of all England's poetesses, but with her memory treasured still more lovingly as wife and mother.

And so it is when we turn from real to mimic life, and look on Shakespeare's Portia: no longer the barrister in doctor's robes; but the true wife, by whom, only to rescue her husband's friend, had they been assumed. There are, indeed, such occasions in real life, as well as in the world of fiction, when an Elizabeth Fry, or a Florence Nightingale, may overstep the ordinary limits of woman's true vocation, and yet justify the act by its results. Of such we may fitly exclaim, in Portia's words:—

> "How many things by season season'd are
> To their right praise and true perfection."

Nevertheless the aim of higher culture for either man or woman, is not to develope such exceptional nobility; but by maturing their reasoning faculties, and widening their range of thought, to fit them better for every worthy aim and duty of life.

And now permit me to refer for a moment to my own special theme. In selecting from the wide field of English Literature, a department capable of being turned to useful account within the very brief limits of twenty lectures, I propose, while tracing out in some degree, the growth of the language, to note the national growth itself, as mirrored in the three great ages of English letters: that of Chaucer, of Shakespeare, and of Pope. And in doing so nothing will be more obvious

than the fallacy of the popular idea, which conceives of the poet as an unpractical dreamer, living apart from all the daily round of homely duties: apostrophising the stars; courting glimpses of the moon; or inditing sonnets to his mistress's eye-brows. The greatest poets have been among the most practical of men, and none more so than Chaucer, Shakespeare, and Milton. In truth, while it is well to find in the common round of daily life employment for those who appear to have no capacity for higher things: no idea is more opposed to the world's experience than that they best perform those duties on which so much of the happiness of wise men and women depends. When Wordsworth dedicates one of his noble sonnets to Milton, his climax shows his own estimate of such duties:—

> "Thy soul was like a star, and dwelt apart;
> Thou hadst a voice whose sound was like the sea;
> Pure as the naked heavens, majestic, free:
> So didst thou travel on life's common way
> In cheerful godliness; and yet thy heart
> The lowliest duties on herself did lay."

Perhaps it may seem to some of you that in an inaugural address for a scheme of higher education, these "lowliest duties" might have been left unnoticed, as wholly outside of all we have now in view. Yet, therein lies the fancied impediment; the lion in our path: all the more difficult to combat because it is a mere creation of the fancy. There is indeed a class of men to be found, who speak, with seeming earnestness, as though some few additional improvements on the sewing machine were all that is needed to make a perfect world without woman at all. But such cynics may fitly be left to their own mechanical resources. Nor is there much more need that I should combat prejudices of men of higher intelligence. It is your own prejudices that have to be overcome. In the prologue to "The Princess," Lilia answers to the pictured nobleness of woman in the Olden Time, when asked: "Lives there such a woman now?"

> "There are thousands now,
> Such women, but convention beats them down;
> It is but bringing up: no more than that;
> You men have done it. * * *
> * * * I would shame you all,
> That love to keep us children."

But Lilia is unjust. It is yourselves, not us, who do so: enlisting your own prejudices on the side of inferior education. There is in the

very nobleness of true womanhood so strong a sense of duty, that she learns to look with jealousy on any movement that seems to tempt her away from those ministering services which will constitute her most honourable vocation while the world endures. It is not therefore, unmeet that I should aim by every argument to enforce the idea that, as high culture and profound scholarship interfere in no degree with man's fitness for the roughest and most prosaic duties; but rather that the cultivated intellect quickens into renewed vigour every inferior power: so is it with woman also. The development of her highest faculties, her powers of reasoning, her range of observation, and compass of knowledge, will only make mind and hand work together the more promptly, in obedience to every tender impulse, and every voice of duty.

Once satisfied of this, I doubt not your hearty coöperation may be relied upon: without which all efforts on our part for the higher education of woman must be vain. Yet I feel assured that, in spite of every impediment, such a scheme lies among the inevitable purposes of the future. It may be rejected now; it may be delayed and frowned on still by the prejudices inherited from a dead past; but it cannot be prevented. It is one of the grand promises which make thoughtful men almost envious of those who are now entering on the life, for some of us so nearly an accomplished thing.

> "Its triumphs will be sung,
> By some yet unmoulded tongue,
> Far on in summers that we shall not see."

The thoughts of men are widening; and we stand in special need of this as an element which will accelerate the world's progress onward and upward to noblest ends. Whether or no this generation shall, in our own province at least, share in any degree in the effort, or partake of its rewards, rests mainly with yourselves.

THE AURORA AND THE SPECTROSCOPE.

Those who are in the habit of watching the splendid auroral displays occasionally witnessed in Canada, will read with interest the following article from the London *Spectator*:—

"Men of science have long felt that a strange secret lay hidden in the brilliant folds of the aurora. The magic arch, with its pointed streamers, shifting silently but swiftly across the heavens, pulsating mysteriously as though illuminated by the fitfully changing glow of some concealed furnace, and rendered supassingly beautiful by the brilliancy of its colours, has

always had strange charms for men of thoughtful mind. And gradually a series of laborious researches had revealed the laws which associate this beautiful apparition with disturbances affecting the economy of our whole earth, and not indistinctly connected with the habitudes of the solar system itself. But recently a discovery has been made which is even more remarkable than any which had before rewarded the labours of physicists—a discovery at once instructive and perplexing, revealing a bond of union between the aurora and a phenomenon hitherto thought to be quite different in character, but leaving us still to learn what the exact nature of that bond of union may be. We had occasion recently to point out that a sudden disturbance in the sun in 1859 had been presently followed by intense magnetic action, the whole electric system of the earth quivering, so to speak, under the influence of the solar forces educed by the disturbance. And we mentioned that amongst the signs of this magnetic action brilliant displays of the auroral streamers had been witnessed in both hemispheres on the night following the solar disturbance. This circumstance teaches us the true character of the aurora as strikingly as any which astronomers and physicists had patiently been gathering together during the past half century. We learn at once that a relation subsists between the aurora, terrestrial magnetism and the central luminary of our scheme. When our skies are illuminated by the magic streamers, we may be sure that those of Venus and of Mars, of Jupiter and of Saturn, nay, even the skies of those unseen orbs which travel far out in space beyond the paths of Uranus and Neptune, are lit up with auroral displays. When once it has been shown that we owe our auroras to solar action, we recognise the cosmical character of the display, and that, in a sense, the terrestrial magnetism on which it depends is a bond of affinity between our earth and its sister orbs. The auroral lights are undoubtedly to be ascribed to electric action taking place at a very considerable height, where the air is very rare indeed. It became, therefore, a question whether anything could be learned by analysing the auroral light, as the condition of that particular part of our atmosphere in which the electric action takes place. Spectroscopic analysis, that strange and powerful mode of research which has revealed so many unlooked-for facts, was accordingly applied to the light of a brilliant aurora. The result was rather surprising. Instead of a rainbow-coloured streak of light, such as would have appeared if the aurora were due to the existence of particles excited to luminosity by electric action, a single line of coloured light appeared. This indicated that the light is due to the incandescence of some gas through which the electric discharges in upper air take place. But this was not the circumstance which attracted surprise. Rather, this was to have been looked for. It was the *position* of the line which astonished our physicists. If the gas had been one which chemists are acquainted with, the bright line would have occupied the position proper to that gas, and would at once have indicated its nature. But there is no known ele-

ment whose spectrum has a bright line where this one appeared. The observation has been repeated over and over again, by Angstrom, by Otto Struve, and recently by Mr. Plummer, always with the same result,—we cannot tell what the substance may be to whose incandescence or luminosity the aurora owes its brilliancy. But now a most remarkable discovery has been effected. Angstrom has found that the mysterious line of the auroral spectrum exists in the spectrum of another object which had been thought to be wholly different in character. Ever since its discovery by Cassini, the zodiacal light has been an object of interest to astronomers. Gradually a theory had been formed respecting it, which had been sanctioned by the authority of such men, as Humboldt and Sir John Herschel. It was held that this appearance is due to the light reflected from a number of minute cosmical bodies travelling around the sun within the orbit of our earth. This theory had never been tested by spectroscopic analysis. Indeed, the zodiacal light shines so faintly that it was hardly hoped its spectrum could be rendered visible. But it was confidently anticipated that if the zodiacal light ever were thus analysed, its spectrum would be that which the theory required—that is, a very faint reproduction of the common solar spectrum. Now, at length, we hear from Angstrom, that the spectrum of the zodiacal light has been observed, and instead of being, as had been expected, a faint rainbow-coloured streak, it presents but a single line. *That line is the same that we see in the spectrum of the aurora!* In other words, the light of the zodiacal gleam and that of the auroral streamers are due to the same sort of electric discharge taking place in the same medium. Without pretending to further interpret this startling result, we may indicate the promise it affords of explaining a number of phenomena which have long seemed most perplexing. When once we recognise the fact that electric action is effective in producing any of the celestial lights, we have a resource available to remove many difficulties. Astronomers were asking how comets, for example, could exhibit the spectrum of the incandescent vapour of carbon—that is, a spectrum indicative of the most intense heat, when, as in the case of Winneck's comet (whose spectrum was of this nature), they were farther from the sun than the earth is. The action of the sun in exciting electrical discharges would be quite sufficient to account for this and similar phenomena. Again, it has long been recognised that the peculiarities of comets' tails seem only explicable as due to electrical action; but astronomers were unwilling to adopt such a theory without some positive evidence in its favour. We now have such evidence; and it is most probable that the first long-tailed comet which is submitted to spectroscopic analysis will establish the view which Euler put forth more than half a century ago, that comets' tails have something in common with the aurora and the zodiacal light. It would indeed be strange if three of the most mysterious phenomena with which men of science are acquainted should find their explanation simultaneously.

BOOK NOTICE.

HISTORY OF THE SETTLEMENT OF UPPER CANADA (ONTARIO), WITH SPECIAL REFERENCE TO THE BAY [OF] QUINTÉ. By Wm. CANNIFF, M.D., M.R.C.S.E., Professor of Surgery, University of Victoria College, Author of the "PRINCIPLES OF SURGERY." Toronto: Dudley & Burns, Printers, 1869. 8vo. pp. xxxii., 671.

Several attempts have been made from time to time in Upper Canada to form Historical Societies, but nothing as yet very tangible has come of them. In the United States such associations abound and are creditably sustained. The following are some of them; The Massachusetts Historical Society; The New England Historico-Genealogical Association; The New Hampshire Historical Society; The Rhode Island ditto; The Long Island ditto; The Iowa ditto; The Chicago ditto. The Canadian Institute receives regularly the Reports issued by a general institution of this class, the American Antiquarian Society. The publications put forth by these and a number of other associations of a similar kind, together with such works as Lossing's Field Books of the Revolution, and of the War of 1812, are likely to preserve for the benefit of future generations in the United States much information relative to early settlements that would otherwise have been wholly lost.

Although, however, our Upper Canadian Historical Societies have proved somewhat abortive, they have nevertheless given rise to some publications of importance. The volume, whose title is to be seen above, for example, has grown out of a paper prepared by Dr. Canniff, at the request of a Society organized at St. Catharines a few years ago. It treats especially of the first settlement of the country in the neighbourhood of the Bay of Quinté, a region of peculiar interest to the author, as being the place of his birth. The work opens with a sketch of Franco-Canadian History, and then proceeds with a narrative of the revolt of the Colonies which now constitute the United States of North America, that revolt having led to the immigration to Western Canada of many of its first inhabitants. The field traversed thus extends beyond Canadian bounds, and is sufficiently wide. The specimens we shall give of the style and contents of the volume will consist of a few paragraphs descriptive of the several classes of refugees during the period, 1784–1790, with some account of their discouragements and encouragements, and modes of proceeding, on first entering the wilderness:—

THE FIRST SETTLERS.

"The settlers of Upper Canada, up to 1790, may be divided into those who were forced away from the States by persecutions, during and after the war; the disbanded troops; and a nobler class, who left the States, unwilling to live under other than British rule.

"To what extent were these pioneers fitted to enter upon the truly formidable work of creating homes, and to secure the necessaries of life for their families? But few of them possessed ought of worldly goods, nearly all were depending upon the bounty of Government. In the first place, they were supplied with rations; which consisted of flour, pork, and a limited quantity of beef, a very little butter, and as little salt.

"They were also supplied with 'clothes for three years, or until they were able to provide these articles for themselves. They consisted of coarse cloth for trowsers and Indian blankets for coats, and of shoes; beside, each received a quantity of seed grain to sow upon the newly cleared land, with certain implements of husbandry. To each was allowed an axe, a hoe, and a spade; a plough, and one cow, were allotted to two families: a whip and cross-cut saw to every fourth family; and, even boats were provided for their use, and placed at convenient points;' and 'that nothing might seem to be wanting, on the part of the Government, even portable corn mills, consisting of steel plates, turned by hand like a coffee-mill, were distributed among the settlers.' We have learned they were also supplied with nails, hand-saws and other materials for building. To every five families were given a 'set of tools,' such as chisels and augers, of various sizes, and drawing-knives; also pick-axes, and sickles for reaping. But, unfortunately, many of these implements were of inferior quality. The axe, with which the burden of the work was to be done, was unlike the light implement now in use, it was but a short-handled ship axe, intended for quite a different use than chopping trees and clearing land. Notwithstanding, these various implements, thoughtfully provided by Government, how greatly must they have come short in meeting the varied wants of the settler, in his isolated clearing, far separated from places whereat things necessary could be procured. However, the old soldier, with his camp experience, was enabled by the aid of his tools, to make homely and rude articles of domestic use. And, in farming, he constructed a rough, but servicable plow, and harrow, and made handles for his scythe.

"Thus provisioned and clothed, and thus armed with implements of industry, the old soldiers advanced to the attack of a last enemy, the wild woods. Unlike any previous warfare, was this lifetime struggle. With location ticket in hand, they filed into the batteaux to ascend the rapids. A certain number of batteaux joined together, generally about twenty or twenty-five, formed a brigade, which was placed under the command of a suitable officer; if not one who had in previous days, led them against the foe. It is quite impossible to conceive of the emotions which found a place in the breasts of the old veterans as they journeyed along wearily from day to day, each one bringing them nearer to the spot on which the tent was to be pitched for the last time. Eagerly, no doubt, they scanned the thickly wooded shores as they passed along. Curiously they examined the small settlement, clustering around Cataraqui. And, it cannot be doubted, when they entered the waters of the lovely Bay of Quinté, the beauty of the scene created a feeling of joy and reconciliation to their lot, in being thus cast

upon a spot so rich in natural beauty. These disbanded soldiers, at least each family, had a canvas tent capable of accommodating, in a certain way, from eight to ten persons. These were pitched upon the shore, at first in groups, until each person had learned the situation of his lot, when he immediately removed thereto. But these were by no means enough tents to give cover to all, and many had only the friendly trees for protection. The first steps taken were to clear a small space of trees, and erect a place of habitation. We have seen what were the implements he had to work with—the materials he must use to subdue the forest tree standing before him.

"Here, at the very threshold of Upper Canadian history, was initiated the 'institution' of 'bees.' 'Each with his axe on his shoulder, turned out to help the other,' in erecting a log shanty. Small and unpretending indeed, were these humble tenements first built along the shores of the bay. The size of each depended upon the number to occupy it. None were larger than twenty by fifteen feet; and an old man tells me that his father, who was a carpenter, built one fifteen feet long and ten feet broad, with a slanting roof seven or eight feet in height. The back-woodsman's shanty, which may yet be seen in the outskirts of our country, is the counterpart of those which were first built; but perhaps many of our readers may never have seen one. 'Round logs,' (generally of basswood,) 'roughly notched together at the corners, and piled one above another, to the height of seven or eight feet, constituted the walls. Openings for a door, and one small window' (always beside the door) 'designed for four lights of glass, 7 × 9, were cut out,' (Government had supplied them with a little glass and putty;) 'the spaces between the logs were chinked with small splinters, and carefully plastered outside and inside, with clay for mortar. Smooth straight poles were laid lengthways of the building, on the walls, to serve as supports of the roof. This was composed 'of strips of elm bark, four feet in length, by two or three feet in width, in layers, overlapping each other, and fastened to the poles by withes.' (The roof was sometimes of black oak, or swamp oak, bark,) 'with a sufficient slope to the back, this formed a roof which was proof against wind and weather. An ample hearth, made of flat stones, was then laid out, and a fire back of field stone or small boulders, rudely built, was carried up as high as the walls. Above this the chimney was formed of round poles, notched together and plastered with mud. The floor was of the same materials as the wall, only that the logs were split in two, and flattened so as to make a tolerably even surface. As no boards were to be had to make a door, until they could be sawn out by the whip-saw, a blanket suspended from the inside for some time took its place. By and by four little panes of glass, were stuck into a rough sash, and then the shanty was complete.'

"Furniture for the house was made by the old soldier; this was generally of the roughest kind. They had the fashion of exchanging work, as well as of having bees. Some of them had been mechanics in other days. A carpenter was a valuable acquisition, and while others would assist him to do his heavy work, he would in return do those little nicer jobs by which the household comforts would be increased. No chests of drawers were required; benches were made of split basswood, upon which to sit, and tables were manufactured in the same style. The bedstead was constructed at the end of the cabin, by taking poles of suitable size and inserting the ends between the logs which formed the walls on either side. These would be placed, before the cracks were filled in and plastered."

CLEARING THE LAND.

"A log hut constructed, wherein to live; and such plain rough articles of furniture as were really necessary provided, the next thing was to clear the land, thickly covered with large trees and tangled bush. Many a swing of the unhandy axe had to be made ere the trees could be felled, and disposed of; and the ground made ready for the grain or root.

"A few years later, and the settler would, in the dry summer season, fire the woods, so as to kill the trees. By the next year they would have become dry, so that by setting fire again they would burn down. In this way much labour was saved. But sometimes the fire would prove unmanageable and threaten to destroy the little house and log barn, as well as crops. Another mode of destroying the large trees, was to girdle them—that is, to cut through the bark all around the tree, whereby it was killed, so that the following year it would likewise burn down.

"A portion of the disbanded troops, as well as other loyalists, had been bred to agricultural pursuits; and some of them, at least those who had not been very long in arms, could the more readily adapt themselves to their new circumstances, and resume their early occupation. The axe of the woodsman was soon swung as vigorously along the shores of the well wooded river and bay, as it had been in the forests years before, in the backwoods of New England.

"It is no ordinary undertaking for one to enter the primeval forest, to cut down the tough-grained trees, whose boughs have long met the first beams of the rising sun, and swayed in the tempest wind; to clear away the thick underbrush, which impedes the step at every turn; to clear out a tangled cedar swamp, no matter how hardy may be the axe-man—how well accustomed to the use of the implement. With the best mode of proceeding, with an axe of excellent make, and keen edge; and, combined with which, let every other circumstance be favourable; yet, it requires a determined will, an iron frame and supple muscle, to undertake and carry out the successful clearing of a farm. But, the refugees and disbanded soldiers, who formed the pioneers of Upper Canada, enjoyed not even ordinary advantages. Many of the old soldiers had not the slightest knowledge of the duties of pioneer life, while others had but an imperfect idea. Some scarcely knew how to fell a tree. Hardy and determined they were; but they possessed not the implements requisite to clear off the solid trees. We have seen that the axe furnished by government was large and clumsy, anb could be swung only with difficulty and great labour, being nothing more than the ship axe then in use. Slow and wearisome indeed, must have been the progress made by the unaccustomed woodsman in the work of clearing, and of preparing the logs for his hut, while he had, as on-lookers, too often a feeble wife and hungry children. * * * * *

"Although deprived of all those comforts, which most of them had enjoyed in early life in the Hudson, and Mohawk valleys, and fruitful fields of Pennsylvania, they toiled on determined to conquer—to make new homes; and, for their children at least, to secure comforts. They rose early, and toiled on all day, whether long or short, until night cast its solemn pall over their rude quiet homes. The small clearing of a few acres gradually widened, the sound of the axe was heard ringing all the day, and the crash of the falling tree sent the startled wild beast to the deeper recesses of the wild wood. The toilers were not all from the same social rank, but now in the

main, all found a common level; the land allotted to the half-pay officers was as thickly covered with wood. A few possessed limited means, and were able to engage a help, to do some of the work, but in a short time it was the same with all; men of education, and who held high positions, rightly held the belief that it was an honour to be a refugee farmer.

"At the close of the war a considerable number of the refugees found safety in New Brunswick and Nova Scotia. But a certain number, not finding such prospects as they had hoped, resolved to try Canada. Consequently, for five or six years after the peace, this class continued slowly to flow, to swell the number of inhabitants of Upper Canada. Some of them tarried, or remained in Lower Canada; but the majority ascended the Bay of Quinté, and settled the new townships at the head of the bay; not a few would remain for a year or two in the townships already settled, working farms on shares, or 'living out,' until the future home was selected. A good many of the first settlers in the sixth, seventh, and eighth townships, had previously lived for awhile in the fourth township.

"The advance of the settlements was along the bay, from Kingston township and Earnest town, westward along both sides. When the settlers in the first, second, third and fourth townships, had, to a certain extent overcome the pioneer's first difficulties, those in the sixth, seventh, eighth, and ninth, were yet undergoing mostly all the same hardships and trials. Far removed from Kingston, they could, with difficulty, procure necessities, and consequently endured greater privation, and experienced severer hardships; but in time these settlers also overcome, and ended their days in comparative comfort."

What Dr. Canniff has accomplished in the volume before us for the district and region of his birth, we should like to see done by competent persons elsewhere. The Bay of Quinté region is but one of the sections of Upper Canada taken possession of and brought into cultivation at an early period. We have the Niagara District, the Home District, the Talbot Settlement, the Huron Tract. Each of these areas might furnish an industrious writer with the materials for a volume. Early local annals are not only interesting to the inhabitants of the several regions in all subsequent time, but are also often of great use to the general historian. Every year, however, that such collections remain unmade, the difficulty manifestly increases, of rendering them as full and complete as they ought to be.

Whenever a second edition is demanded by the public we should advise a thorough revision of Dr. Canniff's work. The eye, at present, is offended by flagrant misprints. The diction in several places wants correction and finish. Our neighbours over the southern border are sometimes spoken of in the strain of a by-gone age. These ebullitions might with advantage be omitted or recast. The very singular and unaccountable mutilation of the fine old historic name *Bay of Quinté* should also certainly be remedied, wherever it occurs. This blemish is

not uniformly to be seen throughout the volume; but it unhappily appears on the title page. Appellations like *Bay of Quinté*, *Bay of Chaleurs*, *Bay of Fundy*, imbedded in our every day speech, and associated with many a story of adventure in primitive Canadian life, must not be tampered with. A vicious rapidity of enunciation, noticeable occasionally in the rural districts of Canada, may produce to the ear the sound *Bay Quinté* (which we cannot refrain from saying, is to ourselves something dreadful; Anglicised too, as probably, at the same time, *Quinté* would be). But the intention of the speaker, in such a case, is not to drop the "of." He in fact does not omit it, but gives it the obscure sound represented by *o'* in such expressions as John o'Groat, Jack o'Lantern, Ten o'clock; which are expressions purely popular, not to be countenanced in the educated speech of the present day, except in sport; not to be copied in the deliberate formation of local or personal names; and above all, in written and printed English of a serious character, not to be obtruded on the eye, in an additionally-clipped condition. H. S.

CANADIAN INSTITUTE.

(Continued from p. 262.)

THE TREASURER'S ACCOUNT.

The Treasurer in Account with the Canadian Institute for the year 1867–68, *from* 1*st December*, 1867, *to* 30*th November*, 1868.

DEBTOR.

Cash Balance last year		$26 8
" Received from Members		331 00
" " for Rent		71 25
" " for Interest on Loan of $3,100, to 30th Nov., 1867		186 00
" " Parliamentary Grant, 1868		750 00
" " for sale of Journal..... Old Series.. $3 00 / New " .. 00 75		3 75
Securities		3,100 00
		$4,468 08

CREDIT.

Cash paid for Printing Journal, Vol. XI., No. 66, Dec., 1867.		$82 75
" Editor Journal, Vol. XI.		240 00
" Library and Museum		91 25
" on Account of Institute:—		
Salary	$336 00	
Insurance	102 25	
Wood	63 25	
Printing and Engrossing	14 50	
Repairs, &c.	73 70	
Postage, $2.22c.; oil, $1.90c.; cabs, $1.70c.; brooms, 50c.; express, 90c.; lamp, 13c.; dusters, 15c.; gum, 10c.; axe, $1.75c.; whitewashing, $1.25c.; chimney-sweeping, 60c.; flour, 5c.	12 25	601 95
Securities		3,100 00
Cash in hand		352 13
		$4,428 08

SAMUEL SPREULL,
Treasurer.

Toronto, 1st December, 1868.

The undersigned Auditors have compared the Vouchers for the above items with the Cash Book, and find them to agree. The balance in hands of Treasurer at date above given is three hundred and fifty-two dollars thirteen cents.

G. H. WILSON,
W. J. MACDONELL, } *Auditors.*

DONATIONS OF BOOKS, &c., RECEIVED SINCE LAST ANNUAL REPORT.

From the Smithsonian Institute.

Contributions to Knowledge, Vol. XV., 1867 1

From Prof. J. Hall, Albany.

Twentieth Annual Report of the Regents of the University of the State of New York, on the Condition of the Cabinet of Natural History, 15th April, 1867 1

From J. Churchill & Sons, London.

On the Principles of Aesthetic Medicine 1

From Gustave Bossange, Paris.

Meteorological Observations made at Madrid, in Spain, 1867 3

From United States Patent Office.

Patent Office Report for Year 1866 3

PAMPHLETS.

From Koninklijk Nederlandsch Meteorlogisch Institute.

Catalogue des Livres Publiés en Langues Etrangeres par L'Academie Imperiale des Sciences de St. Petersbourg, &c., 1867 1
Abhandlungen herausgegeben vom naturwissenschaftlichen Vereine Zu Bremen, 1 Bd. 2 Heft., C. Ed. Müller, 1867 1
Catalogus Plus Quam 10,000 dissertationum et Orationum Juridicarum, &c., Apud Fredericum Müller Bibliopolam Amstelodami, 1867 1
Catalogus Plus Quam 2,700 dissertationum et orationum Theologicarum, &c., Apud Fredericum Müller Bibliopolam Amstelodami, 1867 1

From R. A. Harrison, M.P.

Miscellaneous Statistics of Canada, year 1866 1
Report of the Commissioner of Crown Lands of Canada, year 1866 1

From Scientific Society, University College.

Inaugural Address Literary and Scientific Society, University College, 1866, 1

From Mining Department.

Report of the Chief Commissioner of Mines for the Province of Nova Scotia.. 1

From the Royal University of Norway.

Norwegian Buildings from former times, 1866 1
Etudes sur les Affinites Chimiques, par l. m. Guldberg et P. Waage 1
Foreningen til Norske Fortidsmindesmerkers Bevaring Aarsberetning, for 1866 1
Index Scholarum in Universitate Regia Fredericiana Centesimo Octavo Ejus Semestri, 1867 1
Ditto, Nono ditto, 1867 1
Generalbereting fra Gustad Sindssygeasy for Aaret 1866 1
Beretning om Bodsfoengslets i Aaret, 1866 1
Det Kongelige Norske Frederiks Universitets for Aaret 1866 1
Forhaudlinger i Videnskabs-Selskabet i Christiania Aar. 1865, Med 3 lithographerede Plade 1
Ditto, ditto, Aar. 1866, Med. 2 ditto 1
Ny Magazin for Naturvidenskaberne Udgives afden physiographiske Forening, i Christiania ved M. Sars, og Th. Kjerulf, Femtende Binds forste Hefte, 1866 1
Ditto, ditto, Femtende Binds audit Hefte Christiania, 1867 1
Meteorologiske Jagttagelser det Sydlige Norge, 1863–'64–'65–'66.

Udgivne af det kongelige norske Frederiks Universitet ved det Norske Meteorologiske Institut, Christiania, 1867 1
Ditto, ditto, Paa Fem telegrafstationer ved Norges Kyst Redercurde og Sammenstillede af J. J. Astrand Bestyrer af Bergens observatorium, Forste og Anden Aargang, &c. &c. 1
Meteorolgiske Jagttagelser Paa Christiania Observatorium, 1866 1
Morskinskinna: Pergamentsbog fra Forste Halvdel, &c., R. Unger, Christiania, 1866 1
Forelaesningar och Ofningar vid Carolinska Universitet tet i Lund Hosttermineu, 1865 1
Acta Universitatis Lundensis, Lunds Universitets Ars-Skrift, 1865,—
Mathematik och Naturvetenskap 1
Ratts-och Stats Vetenskap..... 1
Philosophi Sprakvetenskap Och Historia 1

From the Author.

Investigations of a Naturalist between Mingan and Watchicouti, Labrador, by Wm. Couper, Vice-President Quebec Branch Entomological Society of Canada, Quebec, 1858 1

Unknown—Supposed from the Author.

A new Resolution of the Diameters and Distances of the Heavenly Bodies by common Arithmetic, accompanied with an Exhibit of the Variations of the Astronomers, and a Disproof of the Newtonian Theory of Universal Gravitation, by W. Isaacs Loomis, Piermont, Rockland Co., N. Y..... 1
Discovery of the Origin of Gravitation and the Majestic Motive Force which generated the Diurnal and Yearly Revolutions of the Heavenly Bodies, in two Parts, by W. Isaacs Loomis 1

Unknown.

Catalogue de Dunod, Editeur: Ponts et Chaussees, Paris..... 1

From Dr. Hugel, Leipsig.

Verhandlungen des Naturforschenden Vereines in Brunn, V Band, 1866 1

From the Society.

Annual Report of the Minnesota Historical Society, read at the Annual Meeting, January 20, 1868..... 1

From McGill College.

Annual Calendar, McGill College, Montreal, Session 1868–'69 1

From the Chicago Historical Society.

Tenth Annual Statement of the Trade and Commerce of Chicago, for the year ending 31st March, 1868 1

From the Society.

Annual Report of the Leeds Philosophical Society, 1867–'68 1

From the Geological Survey of India.

Palæontologia Indica. Figures and Descriptions of the Organic Remains procured during the progress of the Geological Survey of India, &c.... 1
V. 1-4, The Gastropoda of the Cretaceous Rocks of Southern India, by Fred. Stoliczka, Ph. D. 1867.
Catalogue of the Meteorites in the Museum of Calcutta, 1867 1
Annual Report of the Geological Survey of India, and of the Museum of Geology of Calcutta, Eleventh Year, 1866–'67 1
Memoirs of the Geological Survey of India, Vol. VI., Part I.:
Blandford, W. T., On the Neighbourhood of Lynyan, &c., in Siad.... } 1
" " On the Geology of a Portion of Catch..... }

Memoirs of the Geological Survey of India, Vol. VI. Part II :
Hughes, T. W. H., On the Bokaro Coal Fields 1
Ball, V., On the Ramghur Coal Field.. .....
Blandford, W. T., On the Traps of Western and Central India .....

From the Linnean Society.

List of the Society, 1867 1
The Journal of Proceedings (Session, 1866–'67, Nov. 14) 1
The Journal of the Society—Vol. IX., Zoology, Nos. 36, Sept. 14, 1867, to No. 40, April 23, 1868; Vol. X., Nos. 41 (May 30th), and 42, August 7 7
" " Botany, Vol. IX., No. 40, Aug. 23, 1867 1
" " " Vol. X., No. 41, Sept. 5, 1867, and Nos. 42, Feb. 21, 1868, to No. 47, June 23, 1868 7
Vol. IX. March 19, 1868. The Title, Contents and Index to Vol. IX..... 1

From the Author.

Scritti Varii di Cristofori Negri, Torino, 1867 1
Relazione del Presidente Com. Cristoforo Negri Sullo Stato della Societa Geografica Italiana al 22 Guigno, 1868, &c. 1
Discorso del Comm. Cristoforo Negri, Rieletto Presidente della Societa Geografica nell Adunanza, del 25 Gennaio, 1868 1

From the Dublin University Zoological and Botanical Association.

Proceedings of—
Vol. I., Part 3, Nov. 1859; Vol. II., Part 1, Nov. 1860 2
Natural History Review and Quarterly Journal of Science, No. 4, Vol. VI., Oct. 1859; Nos. 25, 26, 27 and 28, Vol. VII..... 5

In Exchange for Journal.

Journal of the Society of Arts, 1868 2
" of Education, Upper Canada (Ontario), 1868 1
" Franklin Institute, Philadelphia, 1868 1
The Artizan, London, 1868 1
Silliman's Journal, New Haven, 1868 1
Proceedings American Antiquarian Society, Boston, 1868 1
" Academy of Sciences, Philadelphia, 1868 1
" Boston Natural History Society, 1868 1
Historical Recollections, Essex Institute, 1868 1
Annales des Mines, Paris, 1868..... 1
Pharmaceutical Journal, 1868 1
Journal Royal Dublin Society, 1868 1
Transactions Academy Sciences, St. Louis, 1868 1
Annals of the Lyceum of Natural History, New York, 1868 1
Proceedings Philosophical Society of Glasgow, 1868 1
Anthropological Review, 1868 1
Transactions of the Royal Society of Edinburgh, 1867 1
Canadian Naturalist, 1868 1
Journal of Dental Science, 1868 1
Canadian Entomological Journal, 1868 1
Proceedings of the Royal Physical Society, Edinburgh, 1862–1865 1

CANADIAN LOCAL HISTORY.

TORONTO OF OLD:

A SERIES OF COLLECTIONS AND RECOLLECTIONS.

(Continued from page 262.)

BY THE REV. DR. SCADDING.

XIV.—KING STREET, FROM CHURCH STREET TO GEORGE STREET.

We were arrested in our progress on King Street by St. James's Church. Its associations, and those of the District Grammar School and its play-ground to the north, have detained us long. We now return to the point reached when our recollections compelled us to digress. Before proceeding, however, we must record the fact that the break in the line of building on the north side of the street here, was the means of checking the tide of fire which was rolling irresistibly westward, in the great conflagration of 1849. The energies of the local fire-brigade of the day had never been so taxed as they were on that memorable occasion. Aid from steam-power was then undreamt-of. Simultaneous outbursts of flame from numerous widely-separated spots had utterly disheartened every one, and had caused a general abandonment of effort to quell the conflagration. Then it was that the open space about St. James's Church saved much of the town from destruction. To the west, the whole sky was, as it were, a vast canopy of meteors streaming from the east. The church itself was consumed, but the flames advanced no further. A burning shingle was seen to become entangled in the luffer-boards of the belfry, and slowly to ignite the woodwork there: from a very minute start at that point, a stream of fire soon began to rise—soon began to twine itself about the upper stages of the tower, and to climb nimbly up the steep slope of the spire, from the summit of which it then shot aloft into the air, speedily enveloping and overtopping the golden cross that was there. At the same time the flames made their way downwards within the tower, till the internal timbers of the roofing over the main body of the building were reached. There, in the natural order of things, the fire readily spread; and the whole interior of the church, in the course of an hour, was transformed before the eyes of a bewildered multitude looking powerlessly on, first into a vast "burning fiery furnace," and then, as the roof collapsed and fell, into a confused chaos of raging flame. The heavy gilt cross at the apex of the spire came down with a crash, and planted itself in the pavement of the principal entrance below, where the steps, as well as the inner walls of the base of the tower, were bespattered far and wide with the molten metal of the great bell. While the work of destruction was going fiercely and irrepressibly on, the Public Clock in the belfry, Mr. Draper's gift to the town, was heard to strike the hour as usual, and the quarters thrice—exercising its functions and having its appointed say, amidst the sympathies, not loud but deep, of those who watched its doom; bearing its testimony, like a martyr at the stake, in calm and unimpassioned strain, up to the very moment of time when the deadly element touched its vitals.

Opposite the southern portal of St. James's Church was to be seen, at a very early period, the conspicuous trade-sign of a well-known furrier of York, Mr. Joseph Rogers. It was the figure of an Indian Trapper holding a gun, and accompanied by a dog, all depicted in their proper colours on a high, upright tablet set over the doorway of the store below. Besides being an appropriate symbol of the business carried on, it was always an interesting reminder of the time, then not so very remote, when all of York, or Toronto, and its commerce that existed, was the old French trading-post on the common to the west, and a few native hunters of the woods congregating with their packs of "beaver" once or twice a-year about the entrance to its picketted enclosure. Other rather early dealers in furs in York were Mr. Jared Stocking and Mr. John Bastedo. In the *Gazette* for April 25, 1823, we notice a somewhat pretentious

advertisement, headed "Muskrats," which announces that the highest market price will be given in cash for "good seasonable muskrat skins and other furs at the store of Robert Coleman, Esquire, Market Place, York." Mr. Rogers's descendants continue to occupy the identical site on King Street indicated above, and the Indian Trapper, renovated, is still to be seen—a pleasant instance of Canadian persistence and stability. In Great Britain and Europe generally, the thoroughfares of ancient towns had, as we know, character and variety given them by the trade-symbols displayed up and down their misty vistas. Charles the First gave, by letters patent, express permission to the citizens of London "to expose and hang in and over the streets, and ways, and alleys of the said city and suburbs of the same, signs and posts of signs, affixed to their houses and shops, for the better finding out such citizens' dwellings, shops, arts and occupations, without impediment, molestation or interruption of his heirs or successors." And the practice was in vogue long before the time of Charles. It preceded the custom of distinguishing houses by numbers. At periods when the population generally were unable to read, such rude appeals to the eye had, of course, their use. But as education spread, and architecture of a modern style came to be preferred, this mode of indicating "arts and occupations" grew out of fashion. Of late, however, the pressure of competition in business has been driving men back again upon the customs of by-gone illiterate generations. For the purpose of establishing a distinct individuality in the public mind the most capricious freaks are played. In our own streets we have, we believe, two leonine specimens of auro-ligneous zoology, between which the sex is announced to constitute the difference. The lack of such clear distinction between a pair of glittering symbols of this genus and species, in our Canadian London, was the occasion of much grave consideration in 1867, on the part of the highest authority in our Court of Chancery. Although in that *cause celebre*, after a careful physiognomical study by means of photographs transmitted, it was allowed that there *were* points of difference between the two specimens in question, as, for example, that "one looked older than the other;" that "one, from the sorrowful expression of its countenance, seemed more resigned to its position than the other"—still the decree was issued for the removal of one of them from the scene—very properly the later-carved of the two.—Of the ordinary trade-signs that were to be seen along the thoroughfare of King Street no particular notice need be taken. The Pestle and Mortar, the Pole twined round with the black strap, the Crowned Boot, the Axe, the Broad-axe, the Saw, (mill, cross-cut and circular,) the colossal Fowling-piece, the Cooking Stove, the Plough, the Golden Fleece, the Anvil and Sledge-Hammer, the magnified Horse Shoe, each told its own story, as indicating indispensable wares or occupations.

Passing eastward from the painted effigy of the Indian Trapper, we soon came in front of the Market Place, which, so long as only a low wooden building occupied its centre, had an open, airy appearance. We have already dwelt upon some of the occurrences and associations connected with this spot. On King Street, about here, the ordinary trade and traffic of the place came, after a few years, to be concentrated. Here business and bustle were every day, more or less, created by the usual wants of the inhabitants, and by the wants of the country farmers whose waggons in summer, and sleighs in winter, thronged in from the north, east and west. And hereabout at one moment or another, every lawful day, would be surely seen, coming and going, the oddities and street characters of the town and neighbourhood. Having devoted some space to the leading and prominent personages of our drama, it will be only proper to bestow a few words on the subordinates, the Calibans and Gobbos, the Nyms and Touchstones of the piece. From the various nationalities and races of which the community was a mixture, these were drawn. There was James O'Hara, for example, a poor humorous Irishman, a perfect representative of his class in costume, style and manner, employed as bellman at auctions, and so on. When the town was visited by the travelling cutters-out of likenesses in black paper (some years ago such things created a sensation), a full-length of O'Hara was suspended at the entrance to their rooms, recognized at once by every eye, even without the aid of the "Shoot easy" inscribed on a label issuing from the mouth. There was Jock Murray, the Scotch carter; and after him, William Pettit, the English one; and the carter who drove the horse with the "spring-halt": (every school-lad in the place was familiar with the peculiar twitch upwards of the near hind leg in the gait of this nag.) The negro population was small. Every individual of colour was recognizable at sight. Black Joe and Whistling Jack were two notabilities: both of them negroes of African birth. In military bands a negro drummer or

cymbal-player was formerly often to be seen. The two men just named, after obtaining a discharge from a regiment here, gained an honest livelihood by chance employment about the town. Joe, a well-formed, well-trained figure, was to be seen, still arrayed in some old cast-off shell-jacket, acting as porter, or engaged about horses: once already we have had a glimpse of him in the capacity of sheriff's assistant, administering the lash to wretched culprits in the market-place. The other, besides playing other parts, officiated occasionally as a sweep; but his most memorable accomplishment was a melodious and powerful style of whistling musical airs, and a faculty for imitating the bag-pipes to perfection.—For the romantic sound of the name, the tall, comely negress, Amy Pompadour, should also be mentioned in the record. But she was of servile descent: at the time of which we write slavery was only just dying out in Upper Canada, as we shall have occasion to note hereafter more at large.—Then came the "Jack of Clubs." Lord Thurlow, we are told, once enabled a stranger to single out in a crowd Dunning, afterwards Lord Ashburton, by telling him to take notice of the first man he saw bearing a strong resemblance to the "Jack of Clubs." In the present case it was a worthy trader in provisions who had acquired among his fellow-townsmen a sobriquet from a supposed likeness to that sturdy court-card figure. He was a short, burly Englishman, whose place of business was just opposite the entrance to the Market. So absolutely did the epithet attach itself to him, that late comers to the place failed to learn his real name: all which was good-humouredly borne for a time; but at last the distinction became burdensome and irritating, and Mr. Stafford removed in disgust to New York.—A well-known character often to be seen about here, too, was an unfortunate English farmer of the name of Cowper, of disordered intellect, whose peculiarity was a desire to station himself in the middle of the roadway, and from that vantage-ground to harangue any crowd that might gather, incoherently, but always with a great show of sly drollery and mirthfulness.—On occasions of militia funeral processions, observant lads and others were always on the look-out for a certain prosperous old cordwainer of York, Mr. Wilson, who was sure then to be seen marching in the ranks, with musket reversed, and displaying with great precision and solemnity the extra-upright carriage and genuine toe-pointed step of the soldier of the days of George the Second. He had been in the regular army, and it was with pride and gusto that he exhibited the perfection to which he had in other days attained. The slow pace required by the Dead March gave the on-looker time to study the antique style of military movement thus exemplified.—It was at a comparatively late period that Sir John Smythe and Spencer Lydstone, poets, were notabilities in the streets: the latter, Mr. Lydstone, recognizable from afar by a scarlet vest, brought out, ever and anon, a printed broadside, filled with eulogiums or satires on the inhabitants of the town, regulated by fees or refusals received. The former, Sir John Smythe, found in the public papers a place for his productions, which by their syntactical irregularities and freedom from marks of punctuation, proved their author (as a reviewer of the day once observed) to be a man *supra grammaticam*, and one possessed of a genius above commas. But his great hobby was a railway to the Pacific, in connection with which he brought out a lithographed map: its peculiarity was a straight black line conspicuously drawn across the continent from Fort William to the mouth of the Columbia. In a tract of his on the subject of this railway he provides, in the case of war with the United States, for steam communication between London in England and China and the East Indies, by "a branch to run on the north side of the township of Cavan and on the south side of Balsam Lake." "I propose this," he says, "to run in the rear of Lake Huron and in the rear of Lake Superior, twenty miles in the interior of the country of the Lake aforesaid; to unite with the railroad from Lake Superior to Winnipeg, at the south-west main trading-post of the North-West Company." The document is signed "Sir John Smythe, Baronet and Royal Engineer, Canadian Poet, LL.D., and Moral Philosopher."

The concourse of traffickers and idlers in the open space before the old Market Place were free of tongue; they sometimes talked, in no subdued tone, of their fellow-townsfolk of all ranks. In a small community every one was more or less acquainted with every one, with his dealings and appurtenances, with his man-servant and maid-servant, his horse, his dog, his waggon, cart or barrow. Those of the primitive residentiaries, to whom the commonalty had taken kindly, were honoured in ordinary speech with their militia-titles of Colonel, Major-Captain, or the civilian prefix of Mister, Honorable Mister, Squire or Judge, as the case might be; whilst others, not held to have achieved any special claims to deference, were named, even

in mature years, by their plain baptismal names, John, Andrew, Duncan, George, and so on. And then, there was a third marking-off of a few, against whom, for one vague reason or another, there had grown up in the popular mind a certain degree of prejudice. These, by a curtailment or national corruption of their proper prenomen, would be ordinarily styled Sandy this, Jock that. In some instances the epithet "old" would irreverently precede, and persons of considerable eminence might be heard spoken of as old Tom so-and-so, old Sam such-a-one. And similarly in respect to the sons and nephews of these worthy gentlemen. Had the community never been replenished from outside sources, few of them would, to the latest moment of their lives, have ever been distinguished except by the plain John, Stephen, Allan, Christopher, and so on, of their infancy, or by the Bill, Harry, Alec, Mac, Dolph, or Bob, acquired in the nursery or school. But enough has been said, for the present at least, on the humours and ways of our secondary characters, as exemplified in the crowd customarily gathered in front of the old Market at York. We shall now proceed on our prescribed route.

The lane leading northward from the north-west corner of Market Square used to be known as Stuart's Lane, from the Rev. George Okill Stuart, once owner of property here. On its west side was a well-known inn, The Farmers' Arms, kept by Mr. Bloor, who, on retiring from business, took up his abode at Yorkville, where it has curiously happened that his name has been attached to a fashionable street, the thoroughfare formerly known as the Concession Line.—The street running north from the north-east angle of Market Square, now known as Nelson Street, was originally New Street, a name which was commemorative of the growth of York westward. The terminal street of the town on the west, prior to the opening of this New Street, had been George Street. The name of "New Street" should never have been changed, even for the heroic one of Nelson. As the years rolled on, it would have become a quaint misnomer, involving a tale, like the name of "New College" at Oxford—a College nearly five hundred years old.

At a point about half-way between New Street and George Street, King Street was, in 1849, the scene of an election *fracas* which, in distant quarters, damaged for a time the good name of the town. While passing in front of the Coleraine House, an inn on the north side of the street, and a *rendezvous* of the unsuccessful party, some persons walking in procession, in addition to indulging in the usual harmless groans, flung a missile into the house, when a shot, fired from one of the windows, killed a man in the concourse below.—Owing to the happy settlement of numerous irritating public questions, elections are conducted now, in our towns and throughout our Provinces, in a calm and rational temper for the most part. Only two relics of evil and ignorant days remain amongst us, stirring bad blood twice a-year, on anniversaries consecrated, or otherwise, to the object. A generous-hearted nation, transplanted as they have been almost *en masse* to a new continent, where prosperity, wealth and honours have everywhere been their portion, would shew more wisdom in the repudiation than they do in the recognition and studied conservation of these hateful heir-looms of their race.

XV.—KING STREET—DIGRESSION INTO DUKE STREET.

On passing George Street, as we intimated a moment ago, we enter the parallelogram which constituted the original town-plot. Its boundaries were George Street, Duchess Street, Ontario Street (with the lane south of it), and Palace Street. From this, its old core, York spread westward and northward, extending at length in those directions respectively (under the name of TORONTO) to the Asylum and Yorkville; while eastward its developments—though here less solid and less shapely—were finally bounded by the windings of the Don. Were Toronto an old town on the European Continent, George Street, Duchess Street, Ontario Street and Palace Street, would probably be boulevards, shewing the space once occupied by stout stone walls. The parallelogram just defined represents "the City" in modern London, or "la Cité" in modern Paris—the original nucleus round which gradually clustered the dwellings of later generations.

Before, however, we enter upon what may be styled King Street proper, it will be convenient to make a momentary digression northwards into Duke Street, anciently a quiet, retired thoroughfare, skirted on the right and left by the premises and grounds and houses of several most respectable inhabitants. At the north-west angle of the intersection of this street with George Street was the home of Mr. Washburn; but this was comparatively a recent erection.

Its site previously had been the brickyard of Henry Hale, a builder and contractor, who put up the residence, possessing some architectural pretensions, on the south-east angle of the same intersection, diagonally across; occupied in the second instance by Mr. Moore, of the Commissariat; then by Dr. Lee, and afterwards by Mr. J. Murchison. (The last named was for a long time the Stultz of York, supplying all those of its citizens, young and old, who desired to make an attractive or intensely respectable appearance, with vestments in fine broadcloth.) A little to the north, on the left side of George Street, was the famous Ladies' School of Mrs. Goodman, presided over subsequently by Miss Purcell and Miss Rose. This had been previously the homestead of Mr. Stephen Jarvis, of whom again immediately. Advancing on Duke Street eastward a little way, we came, on the left, to the abode of Sir William Campbell. (The still extant *brick* mansion it of the late date of 1822.) Then on the right, one square beyond, at the south-easterly corner where Caroline Street intersects, we reached the house of Mr. Secretary Jarvis, a man of great note in his day, whose name is familiar to all who have occasion to examine the archives of Upper Canada in the administrations of Governors Simcoe, Hunter and Gore. A fine portrait of him exists, but it has been transmitted to relatives in England. Mr. Stephen Jarvis, above named, was long the Registrar of Upper Canada. His hand-writing is well-known to all holders of early deeds. He and the Secretary were first cousins; of the same stock as the well-known Bishop Jarvis of Connecticut, and the Church-historian, Dr. Samuel Farmer Jarvis. Both were officers in incorporated Colonial regiments before the independence of the United States; and both came to Canada as United Empire Loyalists. Mr. Stephen Jarvis was the founder of the leading Canadian family to which the first Sheriff Jarvis belonged. Mr. Samuel Peters Jarvis, from whom "Jarvis Street" has its name, was the son of Mr. Secretary Jarvis. On the left, one square beyond the abode of Mr. Secretary Jarvis, came the premises and home of Mr Surveyor General Ridout, the latter a structure still to be seen in its primitive outlines, a good specimen of the old type of early Upper Canadian family residences of a superior class; combining the qualities of solidity and durability with those of snugness and comfort in the rigours of winter and the heats of summer. In the rear of Mr. Ridout's house was for some time a family burial-plot; but, like several similar private enclosures in the neighborhood of the town, it became disused after the establishment of regular cemeteries.

Nearly opposite Mr. Ridout's, in one of the usual long, low Upper Canadian one-storey dwellings, shaded by lofty Lombardy poplars, was the home of the McIntoshes, who are to be commemorated hereafter in connection with the Marine of York; and here, at a later period, lived for a long time Mr. Andrew Warffe and his brother John. Mr. Andrew Warffe was a well-known employé in the office of the Inspector General, Mr. Baby, and a lieutenant in the Incorporated Militia.

By one of the vicissitudes common in the history of family-residences everywhere, Mr. Secretary Jarvis's house, which we just now passed, became afterwards the place of business of a memorable cutler and gunsmith, named Isaac Columbus. During the war of 1812, Mr. Columbus was employed as armourer to the Militia, and had a forge near the garrison. Many of the swords used by the Militia officers were actually manufactured by him. He was a native of France; a liberal-hearted man, ever ready to contribute to charitable objects; and a clever artizan. Whether required to "jump" the worn and battered axe of a backwoodsman, to put in order a surveyor's theodolite, or to replace for the young geometrician or draughtsman an instrument lost out of his case, he was equally *au-fait*. On occasion he could even supply an elderly lady or gentleman with a set of false teeth, and insert them. In our boyhood we had occasion to get many little matters attended to at Mr. Columbus's. Once, on leaving word that a certain article must be ready by a particular hour, we remember being informed that "must" was only for the King of France. His political absolutism would have satisfied Louis XIV. himself. He positively refused to have anything to do with the "liberals" of York, expressly on the ground that, in his opinion, the modern ideas of government "hindered the King from acting as a good father to the people." An expressson of his, "first quality, blue!" used on a particular occasion in reference to an extra finish to be given to some steel-work for an extra price, passed into a proverb among us boys at school, and was extensively applied by us to persons and things of which we desired to predicate a high degree of excellence.—Over Columbus's workshop, at the corner of Caroline Street, we are pretty sure his name appeared as here

given; and so it was always called. But we observe in some lists of early names in York, that it is given as "Isaac Collumbes." It is curious to note that the great discoverer's name is a latinization of Colon, Coulon, Colombe, descendant each of *columba*, dove, of which *columbus* is the masculine form.

XVI.—KING STREET, FROM GEORGE STREET TO CAROLINE STREET.

We now retrace our steps to King Street, at its intersection with George Street; and here our eye immediately lights on an object connected with the early history of Education in York. Attached to the east side of the house at the south-east angle of the intersection is a low building, wholly of stone, resembling a small root-house. Its structure is concealed from view now by a coating of clapboards. This was the first school-house possessing a public character in York. It was where Dr. Stuart taught, afterwards Archdeacon of Kingston. The building was on his property, which became afterwards that of Mr. George Duggan, once before referred to. (In connection with St. James's Church, it should have been recorded that Mr. Duggan was the donor and planter of the row of Lombardy poplars that formerly stood in front of that edifice, and which figure conspicuously in the old engravings of King Street. He was an Irishman of strong opinions. He once stood for the town against Mr. Attorney-General Robinson, but did not get in. When the exigencies of later times required the uprooting of the poplar trees, now become overgrown, he warmly resented the removal; and it was at the risk of grievous bodily harm that the Church-warden of the day, Mr. T. D. Harris, carried into effect the resolution of the Vestry.) Dr. Stuart's was the Home District School. From a contemporary record, now before us, we learn that it opened on June the first, 1807, and that the first names entered on its books were those of John Ridout, William A. Hamilton, Thomas G. Hamilton, George H. Detlor, George S. Boulton, Robert Stanton, William Stanton, Angus McDonnell, Alexander Hamilton, Wilson Hamilton, Robert Ross, Allan McNab. To this list, from time to time, were added many other old Toronto or Upper Canadian names; as, for example, the following: John Moore, Charles Ruggles, Edward Hartney, Charles Boulton, Alexander Chewett, Donald McDonnell, James Edward Small, Charles Small, John Hayes, George and William Jarvis, William Boukett, Peter McDonnell, Philemon Squires, James McIntosh, Bernard, Henry and Marshall Glennon, Richard Brooke, Daniel Brooke, Charles Reade, William Robinson, Gilbert Hamilton, Henry Ernst, John Gray, Robert Gray, William Cawthra, William Smith, Harvey Woodruff, Robert Anderson, Benjamin Anderson, James Givins, Thomas Playter, William Pilkington. The French names Belcour, Hammell and Marian occur. (There were bakers or confectioners of these names in York at an early period.) From the same record it appears that female pupils were not excluded from the primitive Home District School. On the roll are names which surviving contemporaries would recognize as belonging to the beau monde of Upper Canada, distinguished and admired in later years.

A building-lot, eighty-six feet in front and one hundred and seventeen in depth, next to the site of the school, is offered for sale in the *Gazette* of the 18th of March, 1822; and in the advertisement it is stated to be "one of the most eligible lots in the Town of York, and situated in King Street, in the centre of the Town." To the left, just across from this choice position, was, in 1833, Wragg & Co.'s establishment, where such matter-of-fact articles as the following could be procured: "Bending and unbending nails, as usual; wrought nails and spikes of all sizes [a change since 1810]; ox-traces and cable-chains; tin; double and single sheet iron; sheet brass and copper; bar, hoop, bolt and rod iron of all sizes; shear, blister and cast steel; with every other article in the heavy line, together with a very complete assortment of shelf goods, cordage, oakum, pitch, tar and rosin: also a few patent machines for shelling corn." (A much earlier resort for such merchandize was Mr. Peter Paterson's, on the west side of the Market Square.) Of a date somewhat subsequent to that of Messrs. Wragg's advertisement, was the depôt of Mr. Harris for similar substantial wares. This was situated on the north side of King Street, westward of the point at which we are now pausing. It long resisted the great conflagration of 1849, towering up amidst the flames like a black, isolated crag in a tempestuous sea; but at length it succumbed. Having been rendered, as it was supposed, fire-proof externally, no attempt was made to remove the contents of the building.—To the east of Messrs. Wragg's place of business, on the same side, and dating back to an early period, was the dwelling house and mart of Mr. Mosley, the principal auctioneer and

appraiser of York, a well-known and excellent man. He had suffered the severe calamity of a partial deprivation of the lower limbs by frost-bite; but he contrived to move about with great activity in a room or on the side-walk by means of two light chairs, shifting himself adroitly from the one to the other. When required to go to a distance or to church, (where he was ever punctually to be seen in his place), he was lifted by his son or sons into and out of a wagonette, together with the chairs.

On the same (north) side was the place where the Messrs. Lesslie, enterprising and successful merchants from Dundee, dealt at once in two remunerative articles—books and drugs. The left side of the store was devoted to the latter; the right to the former. Their first head-quarters in York had been further up the street; but a move had been made to the eastward, to be, as things were then, nearer the *heart* of the town. This firm had houses carrying on the same combined businesses in Kingston and Dundas. There exists a bronze medal or token, of good design, sought after by collectors, bearing the legend, "E. Lesslie and Sons, Toronto and Dundas, 1822." The date has been perplexing, as the town was not named Toronto in 1822. The intention simply was to indicate the year of the founding of the firm in the two towns; the first of which assumed the name of Toronto at the period the medal was really struck, viz., 1834. On the obverse it bears a figure of Justice with scales and sword: on the reverse, a Plough, with the mottoes, "Prosperity to Canada," "La Prudence et la Candeur."—A smaller Token of the same firm is extant, on which "Kingston" is inserted between "Toronto" and "Dundas."

Nearly opposite was the store of Mr. Monro. Regarding our King Street as the Broadway of York, Mr. Monro was for a long time its Stewart. But the points about his premises that linger now in our recollection the most, are a tasteful flower-garden on its west side, and a trellised verandah in that direction, with canaries in a cage usually singing therein. Mr. Monro was Mayor of Toronto in 1840. He also represented in Parliament the South Riding of York, in the Session of 1844-5.

At the north-west corner, a little further on, resided Mr. Alexander Wood, whose name appears often in the Report of the Loyal and Patriotic Society of 1812, to which reference before has been made, and of which he was the Secretary. A brother of his, at first in copartnership with Mr. Allan, and at a later period, independently, had made money, at York, by business. On the decease of his brother, Mr. Alexander Wood came out to attend to the property left. He continued on the same spot, until after the war of 1812, the commercial operations which had been so prosperously begun, and then retired. At the time to which our recollections are transporting us, the windows of the part of the house that had been the store were always seen with the shutters closed. Mr. Wood was a bachelor; and it was no uncosy sight, towards the close of the shortening autumnal days, before the remaining front shutters of the house were drawn in for the evening, to catch a glimpse, in passing, of the interior of his comfortable quarters, lighted up by the blazing logs on the hearth, the table standing duly spread close by, and the solitary himself ruminating in his chair before the fire, waiting for candles and dinner to be brought in. On sunny mornings in winter he was often to be seen pacing the sidewalk in front of his premises, for exercise, arrayed in a long blue over-coat, with his right hand thrust for warmth into the cuff of his left sleeve, and his left hand into that of his right. He afterwards returned to Scotland, where, at Stonehaven, not far from Aberdeen, he had family estates known as Woodcot and Woodburnden. He died without executing a will; and it was some time before the rightful heir to his property in Scotland and here was determined. It had been his intention, we believe, to return to Canada. The streets that run eastward from Yonge Street, north of Carlton Street, named respectively "Wood" and "Alexander," pass across land that belonged to Mr. Wood.

Many are the shadowy forms that rise before us, as we proceed on our way; phantom-revisitings from the misty Past; the shapes and faces of enterprising and painstaking men, of whose fortunes King Street hereabout was the cradle. But it is not necessary in these reminiscences to enumerate all who, on the right hand and on the left, along the now comparatively deserted portions of that great thoroughfare, amassed wealth in the olden time by commerce and other honourable pursuits, laying the foundation, in several instances, of opulent families.

Quetton St. George, however, must not be omitted, builder of the solid and enduring house on the corner opposite to Mr. Wood's; a structure that, for its size and air of respectability;

for its material, brick, when as yet all the surrounding habitations were of wood; for its tinned roof, its graceful porch, its careful and neat finish generally, was, for a long time, one of the York lions.—Mr. Quetton St. George was a French royalist officer, and a chevalier of the order of St. Louis. With many other French gentlemen he emigrated to Canada at the era of the Revolution. He was of the class of the noblesse, as all officers were required to be; which class, just before the Revolution, included, it is said, 90,000 persons, all exempt from the ordinary taxes of the country. The surname of St. George was assumed by M. Quetton to commemorate the fact that he first set foot on English ground on St. George's day. On proceeding to Canada, he, in conjunction with Jean Louis, Vicomte de Chalûs, and other distinguished *emigres*, acquired a large estate in wild lands in the rough region north of York, known as the "Oak Ridges." Finding it difficult, however, to turn such property speedily to account, he had recourse to trade with the Indians and remote inhabitants. Numerous stations with this object in view, were established by him in different parts of the country, before his final settlement in York. One of these posts was at Orillia, on Lake Couchiching; and in the Niagara *Herald* of August the 7th, 1802, we meet with the following advertisement: "New Store at the House of the French General, between Niagara and Queenston. Messrs. Quetton St. George and Co. acquaint the Public that they have lately arrived from New York with a general assortment of Dry Goods and Groceries, which will be sold at the lowest price for ready money; for from the uncertainty of their residing any time in these parts, they cannot open accounts with any person. Will also be found at the same store a general assortment of tools for all mechanics. They have likewise well-made Trunks: also empty Barrels. Niagara, July 23." The copartnership implied was with M. de Farcy. The French General referred to was the Comte de Puisaye. The house spoken of still exists, beautifully situated at a point on the Niagara River where the carriage-road between Queenston and the town of Niagara approaches the very brink of the lofty bank, whose precipitous side is even yet richly clothed with fine forest trees, and where the noble stream below, closed in towards the south by the heights above Lewiston and Queenston, possesses all the features of a picturesque inland lake. Attached to the house in question is a curious old fire-proof structure of brick, quaintly buttressed with stone: the walls are of a thickness of three or four feet; and the interior is beautifully vaulted and divided into two compartments having no communication with each other: and above the whole is a long loft of wood, approached by steps on the outside. The property here belonged for a time in later years to Shickluna, the shipbuilder of St. Catharines, who happily did not disturb the interesting relic just described. The house itself was in some respects modernized by him; but, with its steep roof and three dormer windows, it still retains much of its primitive character.—In 1805 we find Mr. St. George removed to York. The copartnership with M. de Farcy is now dissolved. In successive numbers of the *Gazette and Oracle*, issued in that and the following year, he advertises at great length. But on the 20th of September, 1806, he abruptly announces that he is not going to advertise any more: he now once for all, begs the public to examine his former advertisements, where they will find, he says, an account of the supply which he brings from New York every spring, a similar assortment to which he intends always to have on hand: and N. B., he adds: Nearly the same assortment may be found at Mr. Boiton's at Kingston, and at Mr. Boucherville's at Amherstburg, "who transact business for Mr. St. George." As we have, in the advertisements referred to, a rather minute record of articles and things procurable and held likely to be wanted by the founders of society in these parts, we will give, for the reader's entertainment, a selection from several of them, adhering for the most part to the order in which the goods are therein named. From time to time it is announced that there have "just arrived from New York," ribbons, cotton goods, silk tassels, gown-trimmings, cotton binding, wire trimmings, silk belting, fans, beaded buttons, block tin, glove ties, cotton bed-line, bed-lace, rollo-bands, ostrich feathers, silk lace, black veil lace, thread do., laces and edgings, fine black veils, white do., fine silk mitts, love-handkerchiefs, Barcelona do., silk do., black crape, black mode, black Belong, blue, white and yellow do., striped silk for gowns, Chambray muslins, printed dimity, split-straw bonnets, Leghorn do., imperial chip do., best London Ladies' beaver bonnets, cotton wire, Rutlandgauze, band boxes, cambrics, calicoes, Irish linens, callimancoes, plain muslins, laced muslins, blue, black and yellow nankeens, jeans, fustians, long silk gloves, velvet ribbons, Russia sheetings, India satins, silk and cotton umbrellas, parasols, white cottons,

bombazetts, black and white silk stockings, damask table cloths, napkins, cotton, striped nankeens, bandana handkerchiefs, catgut, Tickenburg, brown holland, Creas à la Morlaix, Italian lutestring, beaver caps for children. Then we have Hyson tea, Hyson Chaulon in small chests, young Hyson, green, Souchong and Bohea, loaf, East India and Muscovado sugars, mustard, essence of mustard, pills of mustard, capers, lemon-juice, soap, Windsor do., indigo, mace, nutmegs, cinnamon, cassia, cloves, pimento, pepper, best box raisins, prunes, coffee, Spanish and American "segars," Cayenne pepper in bottles, pearl barley, castor-oil, British oil, pickled oysters. Furthermore, china-ware is to be had in small boxes and in sets; also, Suwarrow boots, bootees, and an assortment of men's, women's and children's shoes, japanned quart mugs, do. tumblers, tipped flutes, violin bows, brass wire, sickles, iron candlesticks, shoemakers' hammers, knives, pincers, pegging awls and tacks, awl-blades, shoe-brushes, copper tea-kettles, snaffle-bits, leather shot belts, horn powder flasks, ivory, horn and crooked combs, mathematical instruments, knives and forks, suspenders, fish-hooks, sleeve-links, sportsmen's knives, lockets, earrings, gold, topaz do., gold watchchains, gold seals, gold brooches, cut gold rings, plain do., pearl do., silver thimbles, do. teaspoons, shell sleeve buttons, silver watches, beads. In stationery there was to be had pasteboard, foolscap paper, second do., letter paper, black and red ink powder and wafers. There was also the following supply of Literature: Telemachus, Volney's Views, Public Characters, Dr. Whitman's Egypt, Evelina, Cecilia, Lady's Library, Ready Reckoner, Looking Glass, Franklin's Fair Sex, Camilla, Don Raphael, Night Thoughts, Winter Evenings, Voltaire's Life, Joseph Andrews, Walker's Geography, Bonaparte and the French People, Voltaire's Tales, Fisher's Companion, Modern Literature, Eccentric Biography, Naval do., Martial do., Fun, Criminal Records, Entick's Dictionary, Gordon's America, Thompson's Family Physician, Sheridan's Dictionary, Johnson's do., Wilson's Egypt, Denon's Travels, Travels of Cyrus, Stephani de Bourbon, Alexis, Pocket Library, Every Man's Physician, Citizen of the World, Taplin's Farriery, Farmer's Boy, Romance of the Forest, Grandison, Campbell's Narrative, Paul and Virginia, Adelaide de Sincere, Emelini, Monk, Abbess, Evening Amusement, Children of the Abbey, Tom Jones, Vicar of Wakefield, Sterne's Journey, Abelard and Eloisa, Ormond, Caroline, Mercutio, Julia and Baron, Minstrel, H. Villars, De Valcourt, J. Smith, Charlotte Temple, Theodore Chypon, What has Been, Elegant Extracts in Prose and Verse, J. and J. Jessamy, Chinese Tales, New Gazzetteer, Smollet's Works, Cabinet of Knowledge, Devil on Sticks, Arabian Tales, Goldsmith's Essays, Bragg's Cookery, Tooke's Pantheon, Boyle's Voyage, Roderick Random, Jonathan Wild, Louisa, Solomon's Guide to Health, Spelling-books, Bibles and Primers.—Our extracts have extended to a great length: but the animated picture of Upper Canadian life at a primitive era, which such an enumeration of items, in some sort affords, must be our apology. Rendered rich in money and lands by his extemporized mercantile operations, Mr. St. George returned to his native France soon after the restoration of Louis XVIII., and passed the rest of his days partly in Paris and partly on estates in the neighborhood of Montpelier. During his stay in Canada he formed a close friendship with the Baldwins of York; and on his departure, the house on King Street, which has given rise to these reminiscences of him, together with the valuable commercial interests connected with it, passed into the hands of a junior member of that family, Mr. John Spread Baldwin, who himself, on the same spot, subsequently laid the foundation of an ample fortune.—(It is a phenomenon not uninteresting to the retrospective mind, to observe, in 1869, after the lapse of half a century, the name of Quetton St. George reappearing in the field of Canadian Commerce.)

Advancing now on our way eastward, we soon came in front of the abode of Dr. Burnside, a New England medical man of tall figure, upright carriage, and bluff, benevolent countenance, an early promoter of the Mechanics' Institute-movement, and an encourager of church-music, vocal and instrumental. Dying without a family dependent on him, he bequeathed his property partly to Charities in the town, and partly to the University of Trinity College, where a scholarship perpetuates his memory.

Just opposite was the residence of the venerable Mrs. Gamble, widow of Dr. Gamble, formerly a surgeon attached to the Queen's Rangers. This lady died in 1859, in her 92nd year, leaving living descendants to the number of two hundred and four. To the west of this house was a well-remembered little parterre, always at the proper season gay with flowers.

At the next corner, on the north side, a house now totally demolished, was the original home of the millionaire Cawthra family, already once alluded to. In the "Gazette and Oracle" for Nov. 29, 1806, the name "J. Cawthra" is for the first time seen, appended to an advertisement, in which he informs the inhabitants of York and the neighboring country that he had just arrived from New York with a general assortment of "apothecary articles;" and that the public can be supplied with everything in that line genuine: also patent medicines: he likewise intimates that he has brought a general assortment of Dry Goods, consisting of "broad cloths, duffils, flannels, swansdown, corduroys, printed calicoes, ginghams, cambric muslins, shirting, muslins, men and women's stockings, silk handkerchiefs, bandana shawls, pulicat and pockethandkerchiefs, calimancoes, dimity and check; also a large assortment of men's, women's and children's shoes, hardware, coffee, tea and chocolate, lump and loaf sugar, tobacco, &c., with many other articles: which he is determined to sell on very low terms at his store opposite Stoyell's tavern. York, Nov. 27, 1806."

Immediately across, at the corner on the south side, was a depôt, insignificant enough, no doubt, to the indifferent passer-by, but invested with much importance in the eyes of many of the early infantiles of York. Its windows exhibited, in addition to a scattering of white clay pipes, and papers of pins suspended open against the panes for the public inspection, a display of circular discs of gingerbread, some with plain, some with scolloped edge; also hearts, fishes, little prancing ponies, parrots and dogs of the same tawny-hued material; also endwise in tumblers and other glass vessels, numerous lengths or stems of prepared saccharine matter, brittle in substance, white-looking, but streaked and slightly penetrated with some rich crimson pigment; likewise on plates and oval dishes, a collection of quadrangular viscous lumps, buff-coloured and clammy, each showing at its ends the bold gashing cut of a stout knife which must have been used in dividing a rope, as it were, of the tenacious substance into inch-sections or parts. In the wrapping paper about all articles purchased here, there was always a *soupçon* of the homely odors of boiled sugar and peppermint. The tariff of the various comestibles just enumerated was well known; it was precisely for each severally, one half-penny. The mistress of this establishment bore the Scottish name of Lumsden—a name familiar to us lads in another way also, being constantly seen by us on the title-pages of school-books, many of which, at the time referred to, were imported from Glasgow, from the publishing-house of Lumsden and Son.

A little way down the street which crosses here, was Major Heward's house, long Clerk of the Peace for the Home District, of whom we have had occasion to speak before. Several of his sons, while pursuing their legal and other studies, became also "mighty hunters;" distinguished, we mean, as enthusiastic sportsmen. Many were the exploits reported of them, in this line. We give here an extract from Mr. McGrath's lively work, published in 1833, entitled "Authentic letters from Upper Canada, with an Account of Canadian Field Sports." "Ireland," he says, "is, in many places, remarkable for excellent cock-shooting, which I have myself experienced in the most favorable situations: not, however, to be compared with this country, where the numbers are truly wonderful. Were I to mention," Mr. McGrath continues, "what I have seen in this respect, or heard from others, it might bring my graver statements into disrepute.—As a specimen of the sport," he says, "I will merely give a fact or two of, not unusual, success; bearing, however, no proportion to the quantity of game. I have known Mr. Charles Heward, of York," he proceeds to state, "to have shot in one day thirty brace at Chippewa, close to the Falls of Niagara—and I myself," Mr. McGrath continues, "who am far from being a first-rate shot, have frequently brought home from twelve to fourteen brace, my brothers performing their part with equal success."—But the younger Messrs. Heward had a field for the exercise of their sportsman skill nearer home than Chippewa. The Island, just across the Bay, where the black-heart plover were said always to arrive on a particular day, the 23rd of May, every year, and the marshes about Ashbridge's bay, and York harbour itself, all abounded with wild fowl.

XVII.—KING STREET, FROM CAROLINE STREET TO BERKELEY STREET.

Returning again to King Street: At the corner of Caroline Street, diagonally across from the Cawthra homestead, was the abode, when ashore, of Capt. Oates, commander of the *Duke of Richmond* sloop, the fashionable packet plying between Niagara and York. He was nearly connected with the family of President Russell, but curiously obtained no share in the broad acres which were, in the early day, so plentifully distributed to all comers. By being unluckily out of the way, too, at a critical moment subsequently, he missed a bequest at the hands of the sole inheritor of the possessions of his relative. Capt. Oates was a man of dignified bearing, of more than the ordinary height. He had seen service on the ocean as master and owner of a merchantman. His portrait, which is still preserved in Toronto, somewhat resembles that of George IV.—A spot passed, a few moments since, on King Street, is associated with a story in which the *Richmond* sloop comes up. It happened that the nuptials of a neighbouring merchant had lately taken place. Some youths, employed in an adjoining warehouse or law-office, took it into their heads that a *feu de joie* should be fired on the occasion. To carry out the idea they proceed, under cover of the night, to the *Richmond* sloop, where she lay frozen in by the Frederic Street wharf, and remove from her deck, without asking leave, a small piece of ordnance with which she was provided. They convey it with some difficulty, carriage and all, up into King Street, and place it in front of the bridegroom's house; run it back, as we have understood, even into the recess underneath the double steps of the porch: when duly ensconced there, as within the port of a man-of-war, they contrive to fire it off, decamping, however, immediately after the exploit, and leaving behind them the source of the deafening explosion. On the morrow the cannon is missed from the sloop, (she was being prepared for the spring navigation): on instituting an inquiry, Capt. Oates is mysteriously informed the lost article is, by some means, up somewhere on the premises of Mr. ———, naming the gentleman who had been honoured with the salute, and that if he desired to recover his property he must despatch some men thither to fetch it.—We shall have occasion to refer again to the *Richmond*, when we come to speak of the early Marine of York Harbour.

Passing on our way eastward we came immediately, on the north side, to one of the principal hotels of York, a long, white, two-storey wooden building. It was called the Mansion House—an appropriate name for an inn, when we understand "Mansion" in its proper, but somewhat forgotten sense, as indicating a temporary abode, a place which a man occupies and then relinquishes to a successor. The landlord here for a considerable time was Mr. DeForest.

We then arrived at the north-west angle of King and Princes streets, where a second public well (we have already commemorated the first,) was sunk, and provided with a pump in 1824—for all which the sum of £36 17s. 6d. was paid to John James on the 19th of August in that year. In the advertisements and contracts connected with this now obliterated public convenience, Princes Street is correctly printed and written as it here meets the eye, and not "Princess Street," as the recent corruption is. Let not the record of our early water-works be disdained. Those of the metropolis of the Empire were once on a humble scale. Thus Master John Stow, in his *Survey of London*, *Anno* 1598, recordeth that "at the meeting of the corners of the Old Jurie, Milke Street, Lad Lane and Aldermanburie, there was of old time a fair well with two buckets; of late years," he somewhat pathetically adds, "converted to a pump."

Just across eastward from the pump was one of the first buildings put up on King Street: it was erected by Mr. Smith, who was the first to take up a building lot, after the laying out of the town-plot. On the opposite side, a few steps further on, was Jordan's—the far-famed "York Hotel"—the hotel *par excellence* of the place, than which no better could be found at the time in all Upper Canada. The whole edifice has now utterly disappeared. Its foundations giving way, it for a while seemed to be sinking into the earth, and then it partially threatened to topple over into the street. It was of antique style when compared with the Mansion House. It was only a storey-and-a-half high. Along its roof was a row of dormer windows. Specimens of this style of hotel may still be seen in the country-towns of Lower Canada. When looking in later times at the doorways and windows of the older buildings intended for public and domestic purposes, as also the dimensions of rooms and the proximity of the ceilings to the floors, we might be led for a moment to imagine that the generation of settlers passed away must have been of smaller bulk and stature than their descendants. But points especially

studied in the construction of early Canadian houses, in both Provinces, were warmth and comfort in the long winters. Sanitary principles were not much thought of, and happily did not require to be much thought of, when most persons passed more of their time in the pure outer air than they do now. Jordan's York Hotel answered every purpose very well. Members of Parliament and other visitors considered themselves in luxurious quarters when housed there. Probably in no instance have the public dinners or fashionable assemblies of a later era gone off with more *eclat*, or given more satisfaction to the persons concerned in them, than did those which from time to time, in every season, took place in what would now be considered the very diminutive ball-room and dining-hall of Jordan's.

As the sidewalks of King Street were apt to partake, in bad weather, of the impassableness of the streets generally at such a time, an early effort was made to have some of them paved. Some yards of foot-path, accordingly, about Jordan's, and here and there elsewhere, were covered with flat flagstones from the lake-beach, of very irregular shapes and of no great size: the effect produced was that of a very coarse, and soon a very uneven mosaic. At Quebec, in the neighbourhood of the Court House, there is retained some pavement of the kind now described; and in the early lithograph of Court House Square, at York, a long stretch of sidewalk is given in the foreground, seamed-over curiously, like the surface of an old Cyclopean or Pelasgic wall. On April the 26th, 1823, it was ordered by the magistrates at Quarter Sessions that "£100 from the Town and Police Fund, together with one-fourth of the Statute Labour within the Town, be appropriated to flagging the sidewalks of King Street, commencing from the corner of Church Street and proceeding east to the limits of the Town, and that both sides of the streets do proceed at the same time." One hundred pounds would not go very far in such an undertaking. We do not think the sidewalks of the primitive King Street were ever paved throughout their whole length with stone.

After Jordan's came Dr. Widmer's surgery, associated with many a pain and ache in the minds of the early people of York, and scene of the performance upon their persons of many a delicate, and daring, and successful remedial experiment. Nearly opposite was the property of Dr. Stoyell, an immigrant, non-practicing medical man from the United States, with Republican proclivities as it used to be thought, who, previous to his purchasing here, conducted an inn at Mrs. Lumsden's corner. (The house on the other side of Ontario Street, westward, was Hayes' Boarding House, noticeable simply as being in session-time, like Jordan's, the temporary abode of many Members of Parliament).

After Dr. Widmer's, towards the termination of King Street, on the south side, was Mr. Small's, originally one of the usual low-looking domiciles of the country, with central portion and two gabled wings, somewhat after the fashion of many old country manor-houses in England. The material of Mr. Small's dwelling was hewn timber. It was one of the earliest domestic erections in York. When re-constructed at a subsequent period, Mr. Charles Small preserved, in the enlarged and elevated building, now known as Berkeley House, the shape and even a portion of the inner substance of the original structure. We have before us a curious plan (undated but old) of the piece of ground originally occupied and enclosed by Mr. Small, as a yard and garden round his primitive homestead; occupied and enclosed, as it would seem, before any building lots were set off by authority on the Government reserve or common here. The plan referred to is entitled "A sketch shewing the land occupied by John Small, Esq., upon the Reserve appropriated for the Government House at York by His Excellency, Lt. Gov. Simcoe." An irregular oblong, coloured red, is bounded on the north side by King Street, and is lettered within—"Mr. Small's Improvements." Round the irregular piece thus shewn, lines are drawn enclosing additional space, and bringing the whole into the shape of a parallelogram: the parts outside the irregularly-shaped red portion, are coloured yellow: and on the yellow, the memorandum appears—"This added would make an Acre." The block thus brought into shapely form is about one-half of the piece of ground that at present appertains to Berkeley House.—The plan before us also incidentally shows where the Town was supposed to terminate:—an inscription—"Front line of the Town"—runs along the following route: up what is now the lane through Dr. Widmer's property; and then, at a right angle eastward along what is now the north boundary of King Street opposite the block which it was necessary to get into shape round Mr. Small's first "Improvement." King Street proper, in this plan, terminates at "Ontario Street:" from the eastern limit of Ontario Street, the continuation of

the highway is marked "Road to Quebec,"—with an arrow shewing the direction in which the traveller must keep his horse's head, if he would reach that ancient city. The arrow, at the end of the inscription just given, points slightly upwards, indicating the fact that the said "Road to Quebec" trends slightly to the north after leaving Mr. Small's clearing.

XVIII.—FROM BERKELEY STREET TO POWER AND TRINITY STREETS.

We now propose to pass rapidly down "the road to Quebec" as far as the Bridge. First we cross, in the hollow, Goodwin's creek, the stream that enters the Bay by the cut-stone Gaol. On the knoll to the right was Pilkington's cottage, a little group of low white buildings in a grove of pines and acacias. Parliament Street, which enters near here from the north, is a memorial of the olden time, when, as we have seen, the Parliament Buildings of Upper Canada were situated in this neighbourhood. In an early section of these Recollections we observed that what is now called Berkeley Street was originally Parliament Street, a name which, like that borne by a well-known thoroughfare in Westminster, for a similar reason, indicated the fact that it led down to the Houses of Parliament. The road that at present bears the name of Parliament Street shews the direction of the track through the primitive woods opened by Governor Simcoe to his summer house on the Don, called Castle-Frank, of which fully, in its place, hereafter. Looking up Parliament Street we are reminded that a few yards from where Duke Street enters, lived at an early period Mr. Richard Coates, an estimable and ingenious man, whose name is associated in our memory with the early dawn of the fine arts in York. Mr. Coates, in a self-taught way, executed, not unsuccessfully, portraits in oil of some of our ancient worthies. Among things of a general or historical character, he painted also for David Wilson, the founder of the "Children of Peace," the symbolical decorations of the interior of the Temple at Sharon. He cultivated music likewise, vocal and instrumental; he built an organ of some pretensions, in his own house, on which he performed; he built another for David Wilson at Sharon. Mr. Coates constructed, besides, in the yard of his house, an elegantly-finished little pleasure yacht of about nine tons burden.

This passing reference to infant Art in York recalls again the name of Mr. John Craig, who has before been mentioned in our account of the interior of one of the many successive St. Jameses. Although Mr. Craig did not himself profess to go beyond his sphere as a decorative and heraldic painter, the spirit that animated him really tended to foster in the community a taste for art in a wider sense. Mr. Charles Daly, also, as a skillful teacher of drawing in water-colours and introducer of superior specimens, did much to encourage art at an early date. In 1834 we find Mr. Daly promoting an exhibition of Paintings by the "York Artists and Amateur Association," and acting as "Honorary Secretary," when the Exhibition for the year took place. Mr. James Hamilton, a teller in the bank, produced, too, some noticeable landscapes in oil. As an auxiliary in the cause, and a ministrant to the wants of artists at an early period, we name, likewise, Mr. Alexander Hamilton; who, in addition to supplying materials in the form of pigments and prepared colours, contributed to the tasteful setting off of the productions of pencil and brush, by furnishing them with frames artistically carved and gilt.—Out of the small beginnings and rudiments of Art at York, one artist of a genuine stamp was, in the lapse of a few years, developed—Mr. Paul Kane; who, after studying in the schools of Europe, returned to Canada and made the illustration of Indian character and life his specialty. By talent exhibited in this class of pictorial delineation, he acquired a distinguished reputation throughout the North American continent; and by his volume of beautifully illustrated travels, published in London, and entitled "Wanderings of an Artist among the Indians of North America," he obtained for himself a recognized place in the literature of British Art.

In the hollow, a short distance to the west of Mr. Coates's, was one of the first buildings of any size ever erected here wholly of stone. It was put up by Mr. Hutchinson. It was a large square family house of three storeys. It still exists, but its material is hidden under a coating of stucco. Another building, wholly of stone, was Mr. Hunter's house, on the west side of Church Street. A portion of Hugill's Brewery likewise exhibited the same solid, English-looking kind of structure. We now resume our route.

XIX.—FROM POWER AND TRINITY STREETS TO DON STREET.

We immediately approach another road entering from the north, which again draws us aside. This opening led up to the only Roman Catholic church in York, an edifice of red brick, substantially built. Mr. Ewart was the architect. The material of the north and south walls was worked into a kind of tasselated pattern, which was considered something very extraordinary. The spire was originally surmounted by a large and spirited effigy of the bird that admonished St. Peter, and not by a cross. It was not a flat, moveable weathercock, but a fixed, solid figure, covered with tin. In this building officiated for some time an ecclesiastic named O'Grady. Mingling with a crowd, in the over curious spirit of boyhood, we here, at funerals and on other occasions, first witnessed the ceremonial forms observed by Roman Catholics in their worship; and once we remember being startled at receiving, by design or accident, from an overcharged *aspergillum* in the hands of a zealous ministrant of some grade passing down the aisle, a copious splash of holy water in the eye. Functionaries of this denomination are generally remarkable for their quiet discharge of duty and for their apparent submissiveness to authority. They sometimes pass and repass for years before the indifferent gaze of multitudes holding another creed, without exciting any curiosity even as to their personal names. But Mr. O'Grady was an exception to the general run of his order. He acquired a distinctive reputation among outsiders. He was understood to be an unruly presbyter; and through his instrumentality, letters of his bishop, evidently never intended to meet the public eye, got into general circulation. He was required to give an account of himself, subsequently, at the feet of the "Supreme Pontiff." Power Street, the name now applied to the road which led up to the Roman Catholic church, preserves the name of the Bishop of this communion, who sacrificed his life in attending to the sick emigrants in 1847. The road to the south, a few steps further on, led to the wind-mill built by Mr. Worts, senior, in 1831. In the possession of Messrs. Gooderham & Worts are three interesting pictures, in oil, which from time to time have been exhibited. They are intended to illustrate the gradual progress in extent and importance of the mills and manufactures at the site of the wind-mill. The first shows the original structure—a circular tower of red brick, with the usual sweeps attached to a hemispherical revolving top; in the distance town and harbour are seen. The second shows the wind-mill dismantled, but surrounded by extensive buildings of brick and wood, sheltering now elaborate machinery driven by steam-power. The third represents a third stage in the march of enterprise and prosperity. In this picture gigantic structures of massive, dark-coloured stone tower up before the eye, vying in colossal proportions and ponderous strength with the works of the castle-builders of the feudal times.—We are told by an inhabitant well known, that when out duck-shooting, now nearly forty years since, he was surprised by falling in with Mr. Worts, senior, rambling apparently without purpose in the bush at the Little Don: all the surrounding locality was then in a state of nature, and frequented only by the sportsman and trapper. On entering into conversation with Mr. Worts, our friend found that he was there prospecting for an object; that, in fact, somewhere near the spot where they were standing, he thought of putting up a wind-mill! The project at the time seemed sufficiently quixotic. But posterity beholds the large practical outcome of the idea then brooding in Mr. Worts's brain. In their day of small things the pioneers of new settlements may take courage from this instance of progress in one generation, from the rough to the most advanced condition. For a century to come, there will be bits of this continent as unpromising, at the first glance, as the mouth of the Little Don, forty years ago, yet as capable of being reclaimed by the energy and ingenuity of man, and being put to divinely-intended and legitimate uses.—Returning now from the wind-mill, once more to the "road to Quebec," in common language, the Kingston road, we passed, at the corner, the abode of one of the many early settlers in these parts that bore German names—the tenement of Peter Ernst, or Ernest as the appellation afterwards became. Just opposite on the left was where Angell lived, the architect of the abortive bridges over the mouths of the Don. We obtain from the York *Observer* of December 11, 1820, some earlier information in regard to Mr. Angell. It is in the form of a "Card" thus headed: "York Land Price Current Office, King Street." It then proceeds—"In consequence of the increase of the Population of the Town of York, and many applications for family accommodation upon the arrival of strangers desirous of becoming settlers, the Subscriber intends to add to the practice of his Office the business of a *House Surveyor* and *Architect*, to

lay out Building Estate, draw Ground plans, *Sections* and *Elevations* to *order*, and upon the most approved *European* and *English* customs. Also to make *estimates* and provide contracts with *proper securities* to prevent impostures, for the performance of the same. E. ANGELL. N. B.—Land proprietors having estate to dispose of, and persons requiring any branch of the above profession to be done, will meet with the most respectful attention on applicatton by letter, or at this office. York, Oct. 2." [1820]. The expression, "York Price Current Office," above used, is explained by the fact that Mr. Angell commenced at this early date the publication of a monthly "Land Price Current List of Estates on Sale in Upper Canada, to be circulated in England, Ireland, Scotland and Wales." Near Mr. Angell, on the same side, lived also Mr. Cummins, the manager of the *Upper Canada Gazette* printing office; and, at a later period, Mr. Watson, another well-known master-printer of York, who lost his life during the great fire of 1849, in endeavoring to save a favorite press from destruction, in the third storey of a building at the corner of King and Nelson streets, a position occupied subsequently by the Caxton-press of Mr. Hill.—On some of the fences along here, we remember seeing, in 1827-8, an inscription written up in chalk or white paint, memorable to ourselves personally, as being the occasion of our first taking serious notice of one of the political questions that were locally stirring the people of Upper Canada. The words inscribed were—No ALIENS! Like the LIBERTY, EQUALITY, FRATERNITY, which we ourselves also subsequently saw painted on the walls of Paris; these words were intended at once to express and to rouse public feeling; only in the present instance, as we suppose now, the inscription emanated from the oligarchical rather than the popular side. The spirit of it probably was "Down with Aliens,"—and not "Away with the odious distinction of Aliens!" A dispute had arisen between the Upper and the Lower House as to the legal terms in which full civil rights should be conferred on a considerable ortion of the inhabitants of the country. After the acknowledgment of Independence in 1783, emigrants from the United States to the British Provinces came in no longer as British subjects, but as foreigners. Many such emigrants had acquired property and exercised the franchise without taking upon themselves, formally, the obligations of British subjects. After the war of 1812, the law in regard to this matter began to be distinctly remembered. The desire then was to check an undue immigration from the southern side of the great lakes; but the effect of the revival of the law was to throw doubt on the land titles of many inhabitants of long standing; doubt on their claim to vote and to fill any civil office. The consent of the Crown was freely given to legislate on the subject: and in 1825-6 the Parliament resolved to settle the question. But a dispute arose between the Lower and Upper House. The Legislative Council sent down a Bill which was so amended in terms by the House of Assembly that the former body declared it then to be "at variance with the laws and established policy of Great Britain, as well as of the United States; and therefore, if passed into a law by this Legislature, would afford no relief to many of those persons who were born in the United States, and who have come into and settled in this Province." The Upper House party set down as disloyal all that expressed themselves satisfied with the Lower House amendments. It was from the Upper House party, we think, that the cry of "No Aliens!" had proceeded. The Aliens measure had been precipitated by the cases of Barnabas Bidwell and of his son Marshall, of whom the former, after being elected, and taking his seat as member for Lennox and Addington, had been expelled the House, on the ground of his being an alien; and the latter had met with difficulties at the outset of his political career, from the same objection against him. In the case of the former, however, his alien character was not the only thing to his disadvantage.—It was in connection with the expulsion of Barnabas Bidwell that Dr. Strachan gave to a member of the Lower House, when hesitating as to the legality of such a step, the remarkable piece of advice, "Turn him out, turn him out! Never mind the law!"—a *dictum* that passed into an adage locally, quoted usually in the Aberdeen dialect. Irritating political questions have now, for the most part, been disposed of in Canada. We have entered into the rest, in this respect, secured for us by our predecessors. The very fences which, some forty years ago, were muttering "No Aliens!" we saw, during the time of the last general election, exhibiting in conspicuous painted characters, the following exhortation: "To the Electors of the Dominion—Put in Powell's Pump"—a humourous advertisement, of course, of a particular contrivance for raising water from depths. We think it a sign of general peace and content, when the populace are expected to enjoy a little jest of this sort.—A small compact

house, with a pleasant little garden in front, on the left, a little way on, was occupied for a while by Mr. Joshua Beard, at the time Deputy Sheriff, but afterwards well known as owner of extensive ironworks in the town. We then came opposite to the abode, on the same side, of Charles Fothergill, some time King's Printer for Upper Canada. He was a man of wide views and great intelligence, fond of science, and an experienced naturalist. Several folio volumes of closely written manuscript, on the birds and animals generally of this continent, by him, must exist somewhere at this moment. They were transmitted to friends in England, as we have understood. We remember seeing in a work by Bewick a horned owl of this country, beautifully figured, which, as stated in the context, had been drawn from a stuffed specimen supplied by Mr. Fothergill. He himself was a skillful delineator of the living creatures that so much interested him. In 1832, Mr. Fothergill sat in Parliament as member for Northumberland, and for expressing some independent opinions in that capacity, he was deprived of the office of King's Printer. He originated the law which established Agricultural Societies in Upper Canada. In 1836, he appears to have been visited in Pickering by Dr. Thomas Rolph, when making notes for his "Statistical Account of Upper Canada." "The Township of Pickering," Dr. Rolph says, "is well settled and contains some fine land, and well watered. Mr. Fothergill," he continues, "has an extensive and most valuable museum of natural curiosities at his residence in this township, which he has collected with great industry and the most refined taste. He is a person of superior acquirements, and ardently devoted to the pursuit of natural philosophy." P. 189. It was Mr. Fothergill's misfortune to have lived too early in Upper Canada. Many plans of his in the interests of literature and science came to nothing for the want of a sufficient body of seconders. In conjunction with Dr. Dunlop and Dr. Rees, it was the intention of Mr. Fothergill to establish at York a Museum of Natural and Civil History, with a Botanical and Zoological Garden attached; and a grant of land on the Government Reserve between the Garrison and Farr's Brewery was actually secured as a site for the buildings and grounds of the proposed institution. A prospectus now before us sets forth in detail a very comprehensive scheme for this Museum, or Lyceum, which embraced also a picture gallery, "for subjects connected with Science and Portraits of individuals," and did not omit "Indian antiquities, arms, dresses, utensils, and whatever might illustrate and make permanent all that we can know of the Aborigines of this great Continent, a people who are rapidly passing away and becoming as though they had never been." For several years Mr. Fothergill published "The York Almanac and Royal Calendar," which gradually became a volume of between four and five hundred duodecimo pages, filled with practical and official information on the subject of Canada and the other British American Colonies. This work is still often resorted to. Hanging in his study we remember noticing a large engraved map of "CABOTIA." It was a delineation of the British Possessions in North America—the present Dominion of Canada, in fact. It had been his purpose in 1823 to publish a "Canadian Annual Register;" but this he never accomplished. While printing the *Upper Canada Gazette*, he edited in conjunction with that periodical and on the same sheet, the "Weekly Register," bearing the motto, "Our endeavor will be to stamp the very body of the time—its form and pressure: we shall extenuate nothing, nor shall we set down aught in malice." From this publication may be gathered much of the current history of the period. In it are given many curious scientific excerpts from his Common Place Book. At a later period he published, at Toronto, a weekly paper in quarto shape, named "The Palladium." Among the non-official advertisements in the *Upper Canada Gazette*, in the year 1823, we observe one signed "Charles Fothergill," offering a reward "even to the full value of the volumes," for the recovery of missing portions of several English standard works which had belonged formerly, the advertisement states, to the "Toronto Library," broken up "by the Americans at the taking of York." It was suggested that probably the missing books were still scattered about, up and down, in the town. It is odd to see the name of "Toronto" cropping out in 1823, in connection with a library. (In a much earlier York paper we notice the "Toronto Coffee House" advertised). Mr. Fothergill belonged to the distinguished Quaker family of that name in Yorkshire. A rather good idea of his character of countenance may be derived from the portrait of Dr. Arnold, prefixed to Stanley's Memoir. An oil painting of him exists, but it has been sent to relatives in England. We observe in Leigh Hunt's *London Journal*, I. 172, a reference to "Fothergill's Essay on the Philosophy, Study and Use of Natural History." If not by our Canadian Fothergill, it was probably

by a near relative of kindred spirit. We give a pathetic extract from a speccimen of this production, in the work just referred to: "Never shall I forget," says the essayist, "the remembrance of a little incident which many will deem trifling and unimportant, but which has been peculiarly interesting to my heart, as giving origin to sentiments and rules of action which have since been very dear to me. Besides a singular elegance of form and beauty of plumage," continues the enthusiastic naturalist, "the eye of the common lapwing is peculiarly soft and expressive; it is large, black, and full of lustre, rolling, as it seems to do, in liquid gems of dew. I had shot a bird of this beautiful species; but, on taking it up, I found it was not dead. I had wounded its breast; and some big drops of blood stained the pure whiteness of its feathers. As I held the hapless bird in my hand, hundreds of its companions hovered round my head, uttering continued shrieks of distress, and, by their plaintive cries, appeared to bemoan the fate of one to whom they were connected by ties of the most tender and interesting nature; whilst the poor wounded bird continually moaned, with a kind of inward, wailing note, expressive of the keenest anguish; and, ever and anon, it raised its drooping head, and turning towards the wound in its breast, touched it with its bill, and then looked up in my face, with an expression that I have no wish to forget, for it had power to touch my heart whilst yet a boy, when a thousand dry precepts in the academical closet would have been of no avail." The length of this extract will be pardoned for the sake of its deterrent drift in respect to the wanton maiming and massacre of our feathered fellow-creatures by the firearms of sportsmen and missiles of thoughtless children.

XX.—FROM DON STREET TO THE BRIDGE.

Eastward from the house where we have been pausing, the road took a slight sweep to the south and then came back to its former course towards the Don bridge, descending in the meantime into the valley of a creek or watercourse, and ascending again from it on the other side. Hereabout, to the left, standing on a picturesque knoll and surrounded by the natural woods of the region, was a good sized two-storey dwelling; this was the abode of Mr. David McNab, sergeant-at-arms to the House of Assembly, as his father had been before him. With him resided several accomplished, kind-hearted sisters, all of handsome and even stately presence; one of them the belle of the day in society at York. Here were the quarters of the Chief McNab, whenever he came up to York from his Canadian home on the Ottawa. It was not alone when present at church that this remarkable gentleman attracted the public gaze; but also, when surrounded or followed by a group of his fair kinsfolk of York, he marched with dignified steps along through the whole length of King Street, and down or up the Kingston road to and from the McNab homestead here in the woods near the Don. In his visits to the capital, the Chief always wore a modified highland costume, which well set off his stalwart, upright form: the blue bonnet and feather, and richly embossed dirk, always rendered him conspicuous, as well as the tartan of brilliant hues depending from his shoulder after obliquely swathing his capacious chest: a bright scarlet vest with massive silver buttons, and dress coat always jauntily thrown back, added to the picturesqueness of the figure. It was always evident at a glance that the Chief set a high value on himself.—"May the MacNab of MacNabs have the pleasure of taking wine with Lady Sarah Maitland?" suddenly heard above the buzz of conversation, pronounced in a very deep and measured tone by his manly voice, made mute for a time, on one occasion, the dinner-table at Government House. So the gossip ran. Another story of the same class, but less likely, we should think, to be true, was, that seating himself, without uncovering, in the Court-room one day, a messenger was sent to him by the Chief Justice, Sir William Campbell, on the Bench, requiring the removal of his cap; when the answer returned, as he instantly rose and left the building, was, that "the MacNab of MacNabs doffs his bonnet to no man!"—At his home on the Chats the Emigrant Laird did his best to transplant the traditions and customs of by-gone days in the Highlands, but he found practical Canada an unfriendly soil for romance and sentiment. Bouchette, in his "British Dominions," i. 82, thus refers to the Canadian abode of the Chief and to the settlement formed by the clan MacNab. "High up," [the Ottawa], he says, "on the bold and abrupt shore of the broad and picturesque Lake of the Chats, the Highland Chief MacNab has selected a romantic residence, Kinnell Lodge, which he has succeeded, through the most unshaken perseverance, in rendering

exceedingly comfortable. His unexampled exertions in forming and fostering the settlements of the township, of which he may be considered the founder and the leader, have not been attended with all the success that was desirable, or which he anticipated." Bouchette then appends a note wherein we can see how readily his own demonstrative Gallic nature sympathized with the kindred Celtic spirit of the Highlander. "The characteristic hospitality that distinguished our reception by the gallant Chief," he says, "when, in 1828, we were returning down the Ottawa, after having explored its rapids and lakes, as far up as Grand Calumet, we cannot pass over in silence. To voyageurs in the remote wilds of Canada," he continues, "necessarily strangers for the time to the sweets of civilization, the unexpected comforts of a well-furnished board, and the cordiality of a Highland welcome, are blessings that fall upon the soul like dew upon the flower. 'The sun was just resigning to the moon the empire of the skies,' when we took our leave of the noble chieftain," he adds, "to descend the formidable rapids of the Chats. As we glided from the foot of the bold bank, the gay plaid and cap of the noble Gaël were seen waving on the proud eminence, and the shrill notes of the piper filled the air with their wild cadences. They died away as we approached the head of the rapids. Our caps were flourished, and the flags (for our canoe was gaily decorated with them) waved in adieu, and we entered the vortex of the swift and whirling stream." In 1836, Rolph, in his "Statistical Account of Upper Canada," p. 146, also speaks of the site of Kinnell Lodge as "greatly resembling in its bold, sombre and majestic aspect, the wildest and most romantic scenery" of Scotland. "This distinguished Chieftain," the writer then informs us, "has received permission to raise a militia corps of 800 Highlanders, a class of British subjects always distinguished for their devoted and chivalrous attachment to the laws and institutions of their noble progenitors, and who would prove a rampart of living bodies in defence of British supremacy whenever or wherever assailed."

The reference in Dean Ramsey's interesting "Reminiscences of Scottish Life and Character" to "the last Laird of MacNab," is perhaps to the father of the gentleman familiar to us here in York, and who filled so large a space in the recollections of visitors to the Upper Ottawa. "The last Laird of MacNab before the clan finally broke up and emigrated to Canada was," says the Dean in the work just named, "a well-known character in the country; and, being poor, used to ride about on a most wretched horse, which gave occasion to many jibes at his expense. The Laird," this writer continues, "was in the constant habit of riding up from the country to attend the Musselburgh races [near Edinburgh]. A young wit, by way of playing him off on the race course, asked him in a contemptuous tone, "Is that the same horse you had last year, Laird?"—"Na," said the Laird, brandishing his whip in the interrogator's face in so emphatic a manner as to preclude further questioning, "Na! but it's the same *whup!*" (p. 216, 9th ed.)—We do not doubt but that the MacNabs have ever been a spirited race. Their representatives here have always been such; and like their kinsmen in the old home, too, they have had, during their brief history in Canada, their share of the hereditary vicissitudes. We owe to a Sheriff's advertisement in the "Upper Canada Gazette or American Oracle" of the 14th of April, 1798, published at Niagara, some biographical particulars and a minute description of the person of the Mr. MacNab who was afterwards, as we have already stated, Usher of the Black Rod to the House of Assembly and father of his successor, Mr. David MacNab, in the same post; father also of the Allan MacNab, whose history forms part of that of Upper Canada. In 1798, imprisonment for debt was the rigorously enforced law of the land. The prominent MacNab of that date had, it would appear, become obnoxious to the law on the score of indebtedness: but finding the restraint imposed irksome, he had relieved himself of it, without asking leave. The hue and cry for his re-capture proceeded as follows: "Two hundred dollars reward! Home District, Upper Canada, Newark, April 2, 1798. Broke the gaol of this District on the night of the 1st instant, [the 1st of April, be it observed,] Allan MacNab, a confined debtor. He is a reduced lieutenant of horse," proceeds the Sheriff, "on the half-pay list of the late corps of Queen's Rangers; aged 38 years or thereabouts; five feet three inches high; fair complexion; light hair; red beard; much marked with the small pox; the middle finger of one of his hands remarkable for an overgrown nail; round shouldered; stoops a little in walking; and although a native of the Highlands of Scotland, affects much in speaking, the Irish dialect. Whoever will apprehend, &c., &c., shall receive the above reward, with all reasonable expenses." The escape of the prisoner on the first of April was probably felt by the

Sheriff to be a practical joke played off on him. We think we detect personal spleen in the terms of the advertisement: in the minuteness of the description of Mr. MacNab's physique, which never claimed to be that of an Adonis; in the biographical particulars, which, however interesting they chance to prove to later generations, were somewhat out of place on such an occasion: as also in a postscript calling on the printers within his Majesty's Governments in America, and those of the United States to give circulation in their respective papers to the above advertisement," &c.

It was a limited exchequer that created embarrassment in the early history—and, for that matter, in much of the later history as well—of Mr. MacNab's distinguished son, afterwards the baronet Sir Allan; and no one could relate with more graphic and humorous effect his troubles from this source, than he was occasionally in the habit of doing. When observing his well-known handsome form and ever-benignant countenance, about in the streets of York, we lads at school were wont, we remember, generally to conjecture that his ramblings were limited to certain bounds. He himself used to dwell with an amount of complacency on the skill acquired in carpentry during these intervals of involuntary leisure, and on the practical results to himself from that skill, not only in the way of pastime, but in the form of hard cash for personal necessities. Many were the panelled doors and venetian shutters in York which, by his account, were the work of his hands.—Once he was on the point of becoming a professional actor. Giving assistance now and then as an anonymous performer to Mr. Archbold, a respectable Manager here, he evinced such marked talent on the boards, that he was seriously advised to adopt the stage as his avocation and employment. The theatre of Canadian public affairs, however, was to be the real scene of his achievements. Particulars are here unnecessary. Successively sailor and soldier (and in both capacities engaged in perilous service); a lawyer, a legislator in both Houses; Speaker twice in the Popular Assembly; once Prime Minister; knighted for gallantry, and appointed an Aide-de-camp to the Queen; dignified with a baronetcy; by the marriage of a daughter with the son of a nobleman, made the possible progenitor of English peers—the career of Allan MacNab cannot fail to arrest the attention of the future investigator of Canadian history.—With our local traditions in relation to the grandiose chieftain above described, one or two stories are in circulation, in which his young kinsman Allan amusingly figures. Alive to pleasantry—as so many of our early worthies in these parts were—he undertook, it is said, for a small wager, to prove the absolute nudity of the knees, &c., of his feudal lord when at a ball in full costume: (the allegation, mischievously made, had been that the Chief was protected from the weather by invisible drawers). The mode of demonstration adopted was a sudden cry from the ingenuous youth addressed to the Chief, to the effect that he observed a spider, or some such object, running up his leg!—a cry instantly followed by a smart slap with the hand, with the presumed intention of checking the onward course of the noxious thing. The loud crack occasioned by the blow left no room for doubt as to the fact of nudity; but the dignified Laird was somewhat disconcerted by the over zeal of his young retainer. Again, at Kingston, the ever-conscious Chief having written himself down in the visitors' book at the hotel as THE MACNAB, his juvenile relative, coming in immediately after and seeing the curt inscription, instantly entered his protest against the monopoly apparently implied, by writing *himself* down, just underneath, in conspicuous characters, as THE OTHER MACNAB—the genius of his coming fortunes doubtless inspiring the merry deed.—We have understood that the house occupied by Mr. Fothergill (where we paused a short time since) was originally put up by Allan MacNab, junior, but never tenanted by him.

XXI.—THE BRIDGE AND ACROSS IT.

We now arrived at the Don bridge. The valley of the Don, at the place where the Kingston Road crosses it, was spanned in 1824 by a long wooden viaduct raised about twenty-five feet above the marsh below. This structure consisted of a series of ten trestles, or frames of hewn timber supporting a roadway of plank. A similar structure spanned the Humber and its marshes on the west side of York. Both of these bridges about the year named had become very much decayed; and occasionally both were rendered impassable at the same time, by the falling in of worn-out and broken planks. The York papers would then make themselves merry on the well-defended condition of the town in a military point of view, approach to it

from the east and west being effectually barred. Prior to the erection of this bridge on the Kingston Road, the river was crossed near the same spot by a scow, worked by the assistance of a rope stretched across the stream. In 1810, we observe that the Humber was also crossed by means of a ferry. In that year the inhabitants of Etobicoke complained to the magistrates in session at York of the excessive toll demanded there; and it was agreed that for the future the following should be the charges:—For each foot passenger, 2½d; for every hog, 1d; for every sheep, the same; for horned cattle, 2½d each; for every horse and rider, 5d; for every carriage drawn by two horses, 1s. 3d. (which included the driver); for every carriage with one horse, 1s. It is presumed that the same tolls were exacted at the ferry over the Don, while in operation. In 1824 not only was the Don bridge in bad repair, but, as we learn from a petition addressed by the magistrates to Sir Peregrine Maitland in that year, the bridge over the Rouge in Pickering, also, is said to be, "from its decayed state, almost impassable, and if not remedied," the document goes on to state, "the communication between this town (York) and the eastern parts of the Province, as well as with Lower Canada by land, will be entirely obstructed." At length the present earthwork across the marsh at the Don was thrown up, and the river itself spanned by a long wooden tube, put together on a suspension principle, roofed over and closed in on the sides, with the exception of oblong apertures for light. It resembled in some degree the bridges to be seen over the Reuss at Lucerne and elsewhere in Switzerland, though not decorated with paintings in the interior, as they are. Stone piers built on piles sustained it at either end. All was done under the superintendence of a United States contractor, named Lewis. It was at him that the *italics* in Mr. Angell's advertisements glanced. The innuendo was that, for engineering purposes, there was no necessity for calling in the aid of outsiders. From a kind of small Friar Bacon's study, occupied in former years by ourselves, situated on a bold point some distance northwards, up the valley, we remember watching the pile-driver at work in preparing the foundation of the two stone piers of the Don bridge: from where we sat at our books we could see the heavy mallet descend; and then, after a considerable interval, we would hear the sharp stroke on the end of the piece of timber which was being driven down. From the same elevated position also, previously, we used to see the teams crossing the high frame-work over the marsh on their way to and from Town, and hear the distant clatter of the horses' feet on the loosely-laid planks. The tubular structure that succeeded the trestle-work bridge did not retain its position very long. The pier at its western extremity was undermined by the water during a spring freshet, and gave way. The bridge, of course, fell down into the swirling tide below, and was carried bodily away, looking like a second ark as it floated along towards the mouth of the river, where at length it stranded and became a wreck. On the breaking up of the ice every spring the Don, as is well known, becomes a mighty rushing river, stretching across from hill to hill. Ordinarily, it occupies but a small portion of its proper valley, meandering along, like an English tide-stream when the tide is out. The bridge carried away on this occasion was notable so long as it stood, for retaining visible marks of an attempt to set fire to it during the troubles of 1837. The next appliance for crossing the river was another tubular frame of timber, longer than the former one; but it was never provided with a roof, and never closed in at the sides. Up to the time that it began to show signs of decay, and to require cribs to be built underneath it in the middle of the stream, it had an unfinished, disreputable look. It acquired a tragic interest in 1859, from being the scene of the murder, by drowning, of a young Irishman named Hogan, a barrister, and, at the time, a member of the Parliament of Canada.—When crossing the high trestlework which preceded the present earth-bank, the traveller, on looking down into the marsh below, on the south side, could see the remains of a still earlier structure, a causeway formed of unhewn logs laid side by side in the usual manner, but decayed, and for the most part submerged in water, resembling, as seen from above, some of the lately discovered substructions in the lakes of Switzerland. This was probably the first road by which wheeled vehicles ever crossed the valley of the Don here. On the protruding ends of some of the logs of this causeway would be always seen basking, on a warm summer's day, many fresh-water turtles; amongst which, as also amongst the black snakes, which were likewise always to be seen coiled up in numbers here, and among the shoals of sunfish in the surrounding pools, a great commotion would take place when the jar was felt of a waggon passing over on the framework above. The rest of the marsh, with the exception of the space occupied by the

ancient corduroy causeway, was one thicket of wild willow, alder, and other aquatic shrubbery, among which was conspicuous the *spiræa*, known among boys as "seven-bark" or "nine-bark," and prized by them for the beautiful hue of its rind, which, when rubbed, becomes a bright scarlet. Here also the blue iris grew plentifully, and reeds, frequented by the marsh-hen; and the bulrush, with its long cat-tails, sheathed in chestnut-coloured felt, and pointing upwards like toy sky-rockets ready to be shot off. (These cat-tails, when dry and stripped, expand into large, white, downy spheres of fluff, and actually were as inflammable as gunpowder, going off with a mighty flash at the least touch of fire). The view from the old tresslework bridge, both up and down the stream, was very picturesque, especially when the forest, which clothed the banks of the ravine on the right and left, wore the tints of autumn. Northward, while many fine elms would be seen towering up from the land on a level with the river, the bold hills above them and beyond were covered with lofty pines. Southward, in the distance, was a great stretch of marsh, with the blue lake along the horizon. In the summer this marsh was one vast jungle of tall flags and reeds, where would be found the conical huts of the muskrat, and where would be heard at certain seasons the peculiar *gulp* of the bittern; in winter, when crisp and dry, here was material for a magnificent pyrotechnical display, which usually, once a year, came off, affording at night to the people of the town a spectacle not to be contemned. Through a portion of this marsh on the eastern side of the river, Mr. Justice Boulton, at a very early period, cut, at a great expense, an open channel in front of some property of his: it was expected, we believe, that the matted vegetation on the outer side of this cutting would float away and leave clear water, when thus disengaged; but no such result ensued: the channel, however, has continued open, and is known as the "Boulton ditch." It forms a communication for skiffs between the Don and Ashbridge's Bay. At the west end of the bridge, just across what is now the gore between Queen Street and King Street, there used to be the remains of a military breastwork thrown up in the war of 1812. At the east end of the bridge, on the south side of the road, there still stands a lowly edifice of hewn logs, erected before the close of the last century, by the writer's father, who was the first owner and occupant of the lots on both sides of the Kingston road at this point. The roadway down to the original crossing-place over the river in the days of the Ferry, and the time of the first corduroy bridge, swerving as it did considerably to the south from the direct line of the Kingston road, must have been in fact a trespass on his lot on the south side of the road: and we find that so notable an object was the solitary house, just above the bridge, in 1806, that the bridge itself, in popular parlance, was designated by its owner's name. Thus in the Upper Canada *Gazette* for March 8, 1800, we read that at a Town Meeting, Jonathan Ashbridge was appointed overseer of highways and fence-viewer for the section of road "from Scadding's bridge to Scarboro'." In 1802 Mr. Ashbridge is again appointed to the same office, and the section of highway placed under his charge is on this occasion named "the Bay Road from Scadding's bridge to Scarboro'." (On this occasion Mr. John Playter is appointed overseer of highways "from the Bay Road to the Don Mills."—During the absence in England of the builder and owner of the house just referred to, it was occupied by Mr. Playter, before the erection of his own residence; and here his eldest son, Mr. Emanuel Playter, was born). Mr. Ashbridge is the early settler from whom Ashbridge's Bay has its name. His farm lay along the lower portion of that sheet of water. Next to him, westward, was the property of Mr. Hastings, whose Christian name was Warren. Years ago, when first beginning to read Burke, we remember wondering why the name of "the great proconsul" of Hindostan looked so familiar to the eye: when we recollected that in our childhood we used frequently to see here along the old Kingston road the name WARREN HASTINGS appended in conspicuous characters, to placards posted up, advertising a "Lost Cow," or some other homely animal, gone astray. Adjoining Mr. Hastings' farm, still moving west, was that of Mr. Mills, with whose name in our own mind is associated the memory of "Hannah Mills," an unmarried member of his household, who was the Sister of Charity of the neighbourhood, ever ready in times of sickness and bereavement to render, for days and nights together, kindly, sympathetic and consolatory aid.—We transcribe the full list of the appointments at the Town Meeting of 1800, for the sake of other old locally familiar names therein embodied; and also as showing the curious and almost incredible fact that in the language of the people, York at that early period, 1800, was beginning to be entitled "the City of York!" "Persons elected at the Town Meeting, held at Miles' Tavern, in the *City of York*, on the 3rd day of March, 1800.

Town clerk, Mr. Edward Hayward, sworn. Assessors: Elisha Beaman and John Ashbridge. Collector: Mr. Jacob Herchmer. Overseer of Highways and Roads, and Fence-viewers: Jonathan Ashbridge, from Scadding's Bridge to Scarboro'. Parshall Terry, from the Bay Road to the Mills. Elias Anderson, Circle of the Humber: sworn. Mal. Wright, Yonge Street, from half Big-Creek bridge to No. 1, inclusive. John Endicott, west end of the city[?]. Edward Wright, do., east end. David Thompson, for Scarboro': all sworn. Pound-keepers: Alexander Galloway, Circle of the Don. John Dennis, do. Humber. John Eomen, sen., Yonge street No. 10 to 25. David Laughton for the City. Town-wardens, sworn: Ephraim Payson, Andrew Thomson. Constables, sworn: John Matthews, Eliphalet Hale, Nat. Jackson, for the City. John Haines for the Humber, and Thomas Gray for Yonge Street." At the same meeting the following understanding was arrived at: "It is agreed by the majority of the inhabitants of the Town that no hogs of any description shall be allowed to run at large within the limits of the City from and after the first day of May next ensuing; and it is further agreed by a majority that every person or persons shall be liable to pay the sum of five shillings lawful currency for each time and for each hog found running at large after that period. It is further agreed that all persons who keep hogs shall cause them to be marked, which mark shall be registered with the town clerk It is further understood that hogs shall run at large in the country as usual. —The majority of the inhabitants agree that all fences shall be five feet high."—When, in 1800 staid inhabitants were found seriously dignifying the group of buildings then to be seen on the borders of the bay, with the magnificent appellation of the "City of York," it is no wonder that at a later period indignation is frequently expressed at the ignominious epithet of "Little," which persons in the United States were fond of prefixing to the name of the place. Thus for example, in the *Weekly Register* so late as June, 1822, we have the editor speaking thus in a notice to a correspondent: "Our friend on the banks of the Ohio, 45 miles below Pittsburg, will perceive," the editor remarks, "that notwithstanding he has made us pay postage [and postage in those days was heavy], we have not been unmindful of his request. We shall always be ready at the call of charity when not misapplied; and we hope the family in question will be successful in their object.—There is one hint, however," the editor goes on to say, "we wish to give Mr. W. Patton, P. M.; which is, although there may be many "*Little*" Yorks in the United States, we know of no place called "*Little York*" in Canada; and beg that he will bear this *little* circumstance in his recollection when he again addresses us." Gourlay also, as we have seen, when he wished to speak cuttingly of the authorities at York, used the same epithet. In gubernatorial proclamations, the phrase modestly employed is—"OUR TOWN OF YORK."

A short distance east from the bridge a road turned northward, known as the "Mill road." It led to the multifarious works, flour-mills, saw-mills, fulling mills, carding-mills, paper-mill, and breweries, founded, in the first instance, by the Helliwells, a vigorous and substantial Yorkshire family, whose heads first settled and commenced operations on the very brink of Niagara Falls, on the Canadian side, but then transferred themselves to the upper valley of the Don, where that river becomes a shallow, rapid stream, and where the surroundings are, on a small scale, quite Alpine in character—a secluded spot at the time, in the rudest state of nature, a favourite haunt of wolves, bears and deer; a spot presenting difficulties peculiarly formidable for the new settler to grapple with, from the loftiness and steepness of the hills and the kind of timber growing thereabout, massive pines for the most part. Associated with the Helliwells in their various enterprises, and allied to them by copartnerships and intermarriage, were the Eastwoods and Skinners, all shrewd and persevering folk of the Midland and North country English stock. It was Mr. Eastwood who gave the name of Todmorden to the village overlooking the mills. Farther up the river, on the hills to the right, were the Sinclairs, very early settlers from New England; and beyond, descending again into the vale, the Taylors and Leas, substantial and enterprising emigrants from England. Hereabout were the "Forks of the Don," where the west branch of that stream, seen at York Mills, enters. The hills in this neighbourhood are lofty and precipitous, and the pines that clothed them were of a remarkably fine growth. The tedious circuit which teams were obliged to make in order to get into the town from these regions by the Don bridge, has since been, to some extent, obviated by the erection of two additional bridges at points higher up the stream, north of the Kingston road.

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—JANUARY, 1869.

Latitude—43° 39′4 *North. Longitude*—5*h.* 17*m.* 33*s. West. Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour				Humidity of Air.				Direction of Wind.			Result.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6. A M.	2 P.M.	10 P.M.	Mean.	6 A M.	2 P M.	10 P.M	M E N		6 A M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P M.	10 P.M.	M'N	6 A M.	2 P.M.	10 P M.		6 A.M.	2 P.M.	10 P.M.	Result.	MEN.		
					°	°	°	°	°																		
1	29.918	29.877	29.855	29.8732	12.9	11.4	9.3	11.45	—13.77	.063	.057	.057	.061	80	78	80	83	N N E	E N E	N E by E	N 66° E	18.2	15.6	14.6	16.62	17.01	...	4.5
2	.650	.467	.437	.5247	23.0	30.9	34.5	29.65	+ 4.45	.106	.157	.181	.148	86	90	87	88	E S E	S E	W by S	S 15 W	15.5	7.6	14.4	3.82	10.59	...	4.0
3	.615	.627	—	—	31.6	35.3	—	—	—	.163	.189	—	—	91	92	—	—	W S W	S W	E S E	S 3 W	9.4	6.5	2.7	2.46	4.46	...	...
4	.428	.254	.243	.3178	36.0	41.7	38.5	38.87	+13.73	.189	.218	.173	.194	89	82	85	81	S E by E	S S W	W	S 48 W	6.0	10.0	15.8	5.17	7.33	...	...
5	.278	.300	.350	.3760	35.2	34.9	28.4	32.77	+ 7.63	.183	.118	.134	.147	89	57	60	78	S W	W by N	W	N 83 W	6.2	16.5	10.6	11.76	12.50	...	inap.
6	.533	.472	.496	.5167	29.8	36.7	31.8	32.48	+ 7.35	.147	.129	.153	.141	88	59	65	77	S W	W by S	S W	S 55 W	13.0	9.0	0.6	6.97	7.06	...	...
7	.570	.491	.522	.5655	34.9	43.2	40.7	39.27	+14.13	.178	.181	.170	.173	87	64	62	72	S W	S W	S W by W	S 60 W	6.6	9.0	6.6	5.94	6.27	...	...
8	.683	.728	.728	.6545	36.3	35.2	33.8	34.75	+ 9.62	.193	.140	.183	.170	90	68	94	84	N by W	N E	E by S	N 89 E	0.6	8.2	18.4	9.04	9.40	0.625	0.2
9	.242	.074	.178	.2328	39.6	43.5	34.9	38.86	+13.72	.237	.250	.176	.204	97	89	86	85	S E by S	S W	S W by W	S 68 W	7.4	11.5	6.2	7.58	9.45	.055	...
10	.550	.687	—	—	30.9	34.5	—	—	—	.149	.148	—	—	86	74	—	—	N W by W	N W	Calm.	N 43 W	4.6	12.2	0.0	3.81	4.01	...	inap.
11	.800	.672	.640	.6462	28.4	30.2	27.0	28.40	+ 3.35	.134	.142	.129	.134	86	83	88	86	W N W	E by S	N E by N	N 34 E	1.5	7.0	7.2	8.04	9.90	...	0.4
12	.531	.676	.718	.6940	23.3	28.4	22.3	24.30	— 0.78	.103	.090	.092	.091	82	57	77	80	N	N W by N	N W by W	N 27 W	15.4	7.5	3.6	6.11	6.38	...	...
13	.855	.766	.764	.7745	20.8	34.5	32.4	29.12	+ 4.03	.090	.148	.138	.125	81	74	75	77	N W by W	S W by S	S W	S 46 W	0.8	14.4	12.6	8.72	8.96	...	...
14	.668	.612	.620	.6045	29.1	38.5	35.1	32.95	+ 7.85	.141	.182	.167	.159	87	78	88	84	W S W	S W	W by S	S 59 W	7.0	10.0	6.4	8.23	8.52	...	...
15	.482	.446	.472	.5047	30.9	34.5	27.0	30.73	+ 5.63	.157	.114	.107	.122	90	57	73	71	W by S	N N W	N W by N	N 26 W	5.0	9.0	15.0	9.76	10.80	...	...
16	.752	.790	.809	.7880	17.9	31.3	24.8	24.12	— 0.88	.079	.107	.105	.096	80	60	79	74	N N W	S S W	S W by W	S 83 W	3.5	5.0	1.2	2.53	3.43	...	...
17	.770	.731	—	—	21.9	31.3	—	—	—	.105	.152	—	—	89	86	—	—	S W by W	E by N	E N E	N 69 E	5.0	13.5	8.7	8.01	8.98	...	...
18	.819	.786	.800	.8127	19.0	20.5	20.5	19.93	— 5.02	.091	.061	.086	.079	89	55	79	70	N E	N E by N	N E by N	N 39 E	8.0	5.6	3.5	4.00	4.00	...	inap.
19	.785	.631	.591	.6080	21.9	29.8	29.5	27.33	+ 2.46	.097	.125	.121	.115	82	75	74	77	N E by N	S W by W	S W by W	S 59 W	0.8	9.6	17.8	8.77	10.07	...	0.1
20	.338	.425	.509	.4577	29.5	28.0	20.1	25.77	+ 0.92	.158	.117	.091	.120	97	76	85	84	S W by W	N N W	N W by W	N 54 W	10.0	20.0	2.2	9.88	11.23	...	0.2
21	.362	.288	.338	.4202	25.2	35.3	17.2	25.47	+ 0.68	.122	.134	.056	.108	90	65	57	75	S W by S	W	N N E	N 40 W	1.0	22.0	15.0	8.91	13.87	...	inap.
22	.740	.771	.763	.7148	6.8	14.3	11.8	12.85	—12.42	.051	.052	.063	.059	86	63	86	77	N	N W by W	W by N	N 89 W	9.0	7.0	3.0	5.64	8.22	...	...
23	.334	.228	.248	.2863	25.5	39.9	33.1	32.90	+ 8.23	.125	.112	.167	.140	91	44	88	76	S W by W	W by S	S W by W	S 68 W	16.2	14.5	8.8	11.12	11.67	...	...
24	.267	.139	—	—	32.0	34.9	—	—	—	.158	.162	—	—	87	79	—	—	S W by W	S W by S	N N W	N 45 W	6.0	2.0	26.6	9.71	12.56	...	...
25	.549	.679	.708	.6828	1.7	11.1	7.5	6.65	—17.93	.044	.047	.049	.047	91	65	78	78	N	N N W	N N W	N 27 W	14.8	14.6	10.8	8.88	10.04	...	...
26	.740	.767	.777	.7903	13.6	22.6	13.6	16.65	— 7.83	.072	.104	.072	.080	90	86	90	86	S W by W	W by N	Calm.	S 80 W	11.6	15.6	0.0	7.54	7.72	...	inap.
27	.715	.540	.520	.5668	14.3	33.1	30.2	26.17	+ 1.82	.076	.167	.128	.123	92	88	76	84	W by N	S W	W S W	S 54 W	4.0	6.8	7.6	5.23	5.44	...	...
28	.480	.610	.639	.5922	30.2	36.7	32.4	33.27	+ 8.97	.149	.137	.153	.147	89	63	83	78	W S W	W S W	S W by W	S 71 W	1.8	12.6	1.0	5.24	5.44	...	...
29	.650	.507	.466	.4762	33.8	36.3	34.9	34.77	+10.57	.173	.176	.186	.177	89	82	92	88	S E by E	S by E	E	N 85 E	0.6	13.0	13.2	10.66	10.84	1.65	...
30	.090	.157	.261	.2483	35.6	37.4	25.5	31.52	+ 7.42	.203	.170	.104	.154	97	76	77	85	E	S W	W by N	N 80 W	3.6	16.5	18.6	13.59	15.08	0.42	0.4
31	.583	.665	—	—	18.3	23.3	—	—	—	.080	.088	—	—	81	70	—	—	W by N	W by N	N W by W	N 49 W	22.6	19.4	6.7	14.39	14.52	...	...
	29.5778	29.5386	29.5558	29.5662	25.20	31.53	26.72	27.71	+ 2.91	.129	.132	.125	.127	88	71	81	80	.....	.....	.....	.....	7.60	4.35	9.01	.....	9.21	0.887	9.8

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JANUARY, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....29.877 at 2 p.m. on 1st. } Monthly range—
Lowest Barometer.....29.074 at 8 a.m. on 9th. } 0.803.

Self-registering Thor.
- Maximum Temperature .....45°0 on 7th & 9th. } Monthly range—
- Minimum Temperature .....—1°0 on 25th. } 46°0.
- Mean Maximum Temperature .....34°69. } Mean daily range—
- Mean Minimum Temperature .....21°95. } 12°64.
- Greatest daily range.....33°6 from a.m. to p.m. of 23rd.
- Least daily range ..... 3°2 from a.m. to p.m. of 5th.

Warmest day..... 7th...Mean Temperature.....39°27. } Difference—32°62.
Coldest day .....25th...Mean Temperature..... 6°65. }

Maximum Radiation. { Solar .....57°8 on 7th. } Monthly range—
{ Terrestrial ... .—5°2 on 25th. } 63°0.

Aurora observed on 2 nights, viz.: 6th, and 7th.

Possible to see Aurora on 14 nights; impossible on 17 nights.

Snowing on 12 days; depth 9.8; duration of fall 68.5.

Raining on 4 days; depth 0.887 inches; duration of fall 17.5 hours.

Mean of Cloudiness—0.68.

Resultant Direction N. 72° W.; Resultant Velocity 3.40.

Mean Velocity 9.21 miles per hour.

Maximum Velocity 32.4 miles, from 11 a.m. to noon of 20th.

Most Windy day 1st; Mean Velocity 17.01 miles per hour.
Least Windy day 16th; Mean Velocity 3.43 miles per hour.

Most Windy hour noon; Mean Velocity 11.54 miles per hour.
Least Windy hour 5 a.m.; Mean Velocity 7.27 miles per hour.

25th. Lunar halo.
27th. Solar halo.
28th. Lunar halo.
30th. Dense fog.

COMPARATIVE TABLE FOR JANUARY.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Vel'y	Mean Velocity.
	°	°	°	°	°					°		
1841	25.6	+ 2.7	42.3	— 6.4	48.7	2	2.150	14	...	...	...	0.36 lbs
1842	27.9	+ 5.0	49.4	1.9	47.5	5	2.170	9	...	...	...	0.78
1843	28.7	+ 5.8	55.4	— 1.8	57.2	6	4.295	12	14.2	...	...	0.69
1844	20.2	— 2.7	45.3	— 7.2	52.5	7	3.005	11	24.9	...	...	0.70
1845	26.5	+ 3.6	45.7	— 0.2	45.9	5	imper.	9	22.7	...	...	0.70
1846	26.7	+ 3.8	44.0	— 1.3	45.3	5	2.335	10	6.0	...	...	0.55
1847	23.3	+ 0.4	42.4	2.7	39.7	7	2.135	5	7.5	...	...	1.09
1848	28.7	+ 5.8	51.1	—11.4	62.5	7	2.245	8	7.1	N 82 W	2.03	5.82mls
1849	18.5	— 4.4	39.5	—14.2	53.7	4	1.175	10	9.2	N 63 W	3.06	6.71
1850	29.7	+ 6.8	46.4	9.9	36.5	5	1.250	8	6.2	N 87 W	0.69	5.80
1851	25.5	+ 2.6	43.4	—12.8	56.2	4	1.275	10	7.8	S 77 W	3.26	7.69
1852	18.4	— 4.6	37.3	—10.6	47.9	0	0.000	19	30.9	N 68 W	3.14	7.67
1853	23.0	+ 0.1	40.9	— 9.7	50.6	1	0·290	6	7.5	N 27 W	2.52	6.34
1854	23.6	+ 0.7	46.4	— 5.4	51.8	7	1·270	11	7.5	N 77 W	2.44	6.91
1855	25.9	+ 3.0	49.0	— 5.4	54.4	5	0.525	13	23.3	N 73 W	1.91	7.26
1856	16.0	— 6.9	34.4	—12.0	46.4	0	0.000	14	13.6	N 75 W	5.24	10.69
1857	12.8	—10.1	37.2	—20.1	57.3	3	inap.	16	21.8	N 70 W	4.96	10.31
1858	30.0	+ 7.1	47.4	6.5	40.9	6	1.152	11	4.0	N 71 W	2.33	7.40
1859	26.4	+ 3.5	43.2	—26.5	69.7	6	1.449	19	16.4	S 81 W	3.17	8.76
1860	23.4	+ 0.5	46.4	— 6.8	53.2	6	0.740	16	8.7	N 89 W	6.09	9.37
1861	19.9	— 3.0	37.0	—11.2	48.2	4	0.685	23	20.6	N 86 W	2.92	9.30
1862	21.7	— 1.2	44.5	— 2.6	47.1	5	0.115	19	27.4	N 26 W	2.09	8.83
1863	28.1	+ 5.2	47.0	—14.0	61.0	10	1.122	17	20.6	N 61 W	1.13	7.23
1864	22.8	— 0.1	44.2	— 9.0	53.2	5	1.165	14	26.3	S 73 W	6.00	10.22
1865	17.7	— 5.2	37.2	— 9.0	46.2	1	0.440	18	14.5	N 85 W	4.80	9.39
1866	20.7	— 2.2	44.0	—14.0	58.0	4	0.522	19	10.3	N 75 W	2.98	9.34
1867	17.6	— 5.3	43.8	— 4.8	48.6	1	inap.	21	42.0	N 55 W	3.27	6.96
1868	19.0	— 3.9	39.0	— 7.0	46.0	2	inap	21	14.6	S 83 W	3.97	8.90
1869	27.7	+ 4.8	45.0	— 1.0	46.0	4	0.887	12	9·8	N 72 W	3.40	9.21
Results to 1869.	22.94	...	43.47	—7.62	51.09	4.38	1.176	13.59	15.90	N 78 W	3.06	8.14
Excess for 1869	+ 4.77	...	+ 1.53	+ 6.62	— 5.09	— 0.38	— 0.288	— 1.59	— 6.10	...	...	+ 1.07

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—FEBRUARY 1869.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17m. 33s. *West.* *Elevation above Lake Ontario, 108 feet.*

Day.	Barom. at temp. of 32°. 9 A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 PM	MN'N.	Excess of Mean above Normal.	Tension of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N.	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Direction of Wind. 6 A.M.	2 P.M.	10 P.M.	Resultant.	Velocity of Wind. 6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN	Rain in inches.	Snow in inches.
1	30.026	30.021	30.088	30.0570	18.3	27.3	18.6	20.43	— 2.12	.087	.076	.076	.077	87	52	76	72	N W b W	N W b W	N N E	N 21 W	7.8	7.0	6.0	4.66	7.50	...	...
2	30.043	29.861	29.665	29.8365	20.1	26.6	27.7	24.37	+ 1.75	.091	.105	.142	.111	85	73	94	84	N N b E	E b S	E N E	E	9.0	16.6	22.0	16.34	16.79	...	6.0
3	29.421	.249	.103	.2397	29.5	27.7	20.5	24.87	+ 2.20	.150	.128	.093	.116	92	84	85	85	E	N E	N b E	N 21 E	16.5	12.5	20.2	16.22	18.44	...	4.0
4	.049	.119	.268	.1600	11.1	14.0	19.4	14.47	— 8.25	.060	.062	.093	.071	83	76	89	83	N N W	N N W	N N W	N 24 W	26.4	19.7	23.5	23.38	23.39	...	0.3
5	.375	.613	.663	.5738	11.4	24.8	23.3	20.32	— 2.47	.057	.066	.089	.072	77	47	71	66	N N W	N W b N	W b S	N 54 W	20.6	18.2	4.0	9.89	11.73	...	...
6	.695	.719	.882	.7796	23.3	29.8	29.1	27.18	+ 4.35	.089	.125	.141	.118	71	75	87	79	W	W S W	N N W	N 63 W	11.6	10.6	7.0	6.00	9.48	...	...
7	30.021	30.081	—	—	12.9	21.9	—	—	—	.069	.071	—	—	89	61	—	—	N	E N E	E b S	N 62 E	6.3	3.5	6.0	3.63	4.50	...	...
8	29.888	29.806	.827	.8440	21.5	29.1	28.0	26.98	+ 4.02	.104	.141	.146	.136	90	92	96	92	E b N	Calm.	Calm.	N 73 E	4.8	0.0	0.0	1.63	1.63	...	0.5
9	.768	.659	.636	.6856	29.1	33.3	31.6	31.37	+ 8.33	.148	.158	.151	.152	92	83	85	87	E b N	E b N	E b N	N 85 E	2.2	5.0	1.8	3.19	3.30	...	...
10	.625	.612	.610	.6157	30.9	36.0	34.2	33.70	+10.63	.149	.172	.177	.166	86	81	89	85	E b N	Calm.	S W b S	S 41 W	0.6	0.0	8.0	2.48	5.09	...	0.2
11	.566	.766	.878	.7522	33.1	41.0	39.1	34.85	+11.68	.167	.131	.133	.135	88	51	82	68	W N W	N W	Calm.	N 56 W	15.2	18.0	0.0	8.39	8.50	...	...
12	.749	.535	.612	.6302	28.4	42.5	41.0	37.77	+14.52	.184	.207	.200	.184	86	76	76	80	Calm.	S W b W	N	S 59 W	0.0	5.4	12.0	1.67	3.92	...	...
13	.594	.590	.685	.6283	35.2	38.9	35.2	36.27	+12.95	.183	.185	.190	.178	89	78	93	83	N	N	N E b E	N 55 E	2.0	8.2	8.0	5.63	6.99	.160	0.4
14	.705	.490	—	—	26.6	24.4	—	—	—	.184	.117	—	—	93	89	—	—	N b N	E b N	N b N	N 78 E	18.8	21.0	17.0	16.86	16.93	...	5.0
15	.700	.125	.175	.1435	33.1	34.9	33.1	34.00	+10.50	.174	.186	.167	.169	92	92	88	87	N E	W b S	S W b W	N 82 W	6.0	5.8	2.0	5.21	7.09	...	0.2
16	.272	.290	.341	.3025	28.0	29.1	25.5	27.35	+ 3.77	.139	.118	.118	.124	90	73	86	83	W b S	W N W	W b N	N 88 W	10.0	15.8	1.4	9.08	9.44	...	0.2
17	.196	28.975	28.901	.0180	30.2	34.9	33.1	32.53	+ 8.83	.149	.186	.174	.166	89	92	92	89	W S W	S W b S	S W b W	N 82 W	8.4	14.5	6.0	9.27	14.32	.005	0.2
18	.103	29.136	29.091	.1038	18.3	24.8	20.8	22.33	— 1.47	.087	.078	.090	.091	87	58	81	76	N W	N W W	N W b W	N 59 W	18.6	6.6	2.6	6.57	8.73	...	0.7
19	28.998	.856	.445	.2938	19.0	22.3	19.7	20.65	— 3.25	.091	.066	.090	.082	89	56	84	75	W b S	W	W b S	N 87 W	22.0	25.5	2.6	13.14	13.86	...	0.2
20	29.426	.509	.714	.5603	26.6	25.2	19.7	23.28	— 0.77	.126	.087	.064	.092	87	63	61	72	W S W	N	N	N 13 W	9.6	12.8	9.4	5.02	6.86	...	0.1
21	.729	.628	—	—	16.9	14.7	—	—	—	.066	.067	—	—	70	78	—	—	N E b N	N N E	N	N 13 E	3.6	11.0	9.4	7.16	7.43	...	5.5
22	.646	.634	.541	.5895	15.4	21.5	18.6	18.57	— 5.76	.077	.069	.083	.080	87	59	83	79	N b W	N	N	N 20 E	5.0	5.2	7.0	5.64	6.09	..	3.0
23	.125	.024	.431	.1807	17.9	19.4	10.0	15.20	— 9.28	.086	.087	.061	.078	87	83	89	86	N E b E	N W b N	N W b W	N 27 W	17.0	26.5	5.5	11.51	13.73	...	9.0
24	.485	.585	.899	.6770	17.9	23.3	12.2	17.75	— 6.87	.072	.054	.065	.066	74	44	86	70	S W b W	W	W N W	S 86 W	15.0	16.2	5.4	10.27	10.87	...	0.2
25	.966	.883	.773	.8543	4.9	24.1	21.2	17.70	— 7.10	.045	.093	.099	.081	82	72	86	80	W	W S W	Calm.	S 30 W	6.0	11.8	0.0	6.15	9.53	...	3.5
26	.392	.263	.316	.3170	31.3	33.4	23.3	28.62	+ 3.62	.166	.171	.103	.138	94	89	82	86	S	W S W	S W b W	S 65 W	13.8	15.0	8.5	9.30	14.14	...	0.5
27	.310	.495	.782	.5505	11.8	12.5	4.6	8.60	—16.57	.058	.055	.045	.051	77	73	84	78	N W	N W b N	W N W	N 44 W	31.0	27.0	6.0	17.34	17.63	...	...
28	.843	.868	—	—	8.2	21.2	—	—	—	.057	.099	—	—	91	86	—	—	N W	N W	W b S	N 79 W	1.8	2.0	4.5	2.84	3.21	...	...
	29.4920	29.4927	29.5553	29.5162	22.76	28.18	24.15	24.96	+ 1.62	.102	.117	.116	.114	86	72	84	80	.....	.....	.....	.....	11.41	12.19	7.35	...	10.04	.165	39.7

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR FEBRUARY, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....30.088 at 10 p. m. on 1st. } Monthly range—
Lowest Barometer .....28.845 at 9 a. m. on 23rd. } 1.243.

Self-registering Ther.

Maximum temperature..... 46°0 on 12th. } Monthly range—
Minimum temperature .....—1°0 on 28th. } 47°0

Mean maximum temperature .....35°32 } Mean daily range—
Mean minimum temperature .....20°31 } 15°01

Greatest daily range.....23°0 from a.m. to p.m. of 28th.
Least daily range..... 2°8 from a.m. to p.m. of 21st.

Warmest day..... 12th...Mean temperature .....37°77 } Difference—29°17.
Coldest day..... 27th...Mean temperature .....8°60 }

Maximum Radiation { Solar ..... 57°2 on 12th } Monthly range—66°7.
{ Terrestrial .....—9°5 on 25th }

Aurora observed on 3 nights, viz.: 5th, 6th, and 11th.
Possible to see aurora on 11 nights; impossible on 17 nights.
Snowing on 19 days; depth, 39.7 inches; duration of fall, 116.6 hours.
Raining on 2 days; depth, 0.165 inches; duration of fall, 7.0 hours.
Mean of cloudiness—0.75.

Resultant direction, N. 34° W.; Resultant velocity, 4.18.
Mean velocity, 10.04 miles per hour.
Maximum velocity, 31.5 miles, from 5 to 6 p.m. of 27th.
Most windy day, 4th; mean velocity, 23.39 miles per hour.
Least windy day, 8th; mean velocity, 1.68 miles per hour.
Most windy hour, 9 a.m.; mean velocity, 12.53 miles per hour.
Least windy hour, 8 p.m.; mean velocity, 6.70 miles per hour.

18th, Lunar halo. 19th, Lunar halo.
22nd, Lunar halo. 23rd, Solar halo.

COMPARATIVE TABLE FOR FEBRUARY.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant Direction.	Resultant Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1841	22.4	— 0.6	44.1	— 1.3	45.4	1	inap.	9	...	...	...	0.61 lbs
1842	26.9	+ 3.9	50.2	2.9	47.3	8	3.625	9	...	...	...	1.03
1843	14.5	— 8.5	38.5	— 9.4	47.9	1	0.475	21	14.4	...	...	1.05
1844	26.0	+ 3.0	47.9	0.6	47.3	4	0.430	7	10.0	...	...	0.43
1845	26.0	+ 3.0	49.1	— 4.2	53.3	5	imp.	9	19.0	...	...	0.99
1846	20.4	— 2.6	41.9	—16.7	58.6	0	0.000	13	46.1	...	...	0.65
1847	21.5	— 1.5	40.9	0.0	40.9	2	0.550	13	27.3	...	...	0.69
1848	26.6	+ 3.6	46.6	0.0	46.6	4	0.775	8	10.8	N 65 W	2.53	5.69 m.
1849	19.5	— 3.5	40.6	— 9.8	50.4	2	0.240	13	19.2	N 41 W	1.48	6.58
1850	26.0	+ 3.0	49.6	2.2	47.4	7	1.235	9	23.1	N 80 W	3.43	7.61
1851	27.6	+ 4.6	50.2	2.0	48.2	7	2.600	4	2.4	N 64 W	1.99	6.94
1852	23.4	+ 0.4	41.2	— 6.2	47.4	3	0.650	11	13.0	S 75 W	3.34	6.42
1853	24.1	+ 1.1	43.4	— 1.4	44.8	4	1.030	15	12.6	N 49 W	2.51	7.30
1854	21.1	— 1.9	42.8	—10.8	53.6	5	1.460	15	18.0	N 7 E	1.73	6.91
1855	15.4	— 7.6	39.0	—25.4	64.4	2	1.770	14	21.8	N 40 W	4.34	8.17
1856	15.7	— 7.3	37.8	—18.7	56.5	0	0.000	8	9.7	N 81 W	7.70	10.71
1857	28.5	+ 5.5	52.4	— 5.9	58.3	11	3.050	11	11.7	S 78 W	3.68	9.82
1858	17.0	— 6.0	42.4	— 7.3	49.7	1	inap.	16	26.7	N 72 W	3.22	9.12
1859	26.0	+ 3.0	46.2	2.1	44.1	6	0.455	14	8.3	S 54 W	2.72	8.50
1860	22.8	— 0.2	50.2	— 8.5	58.7	7	1.330	13	18.8	N 61 W	3.28	8.73
1861	26.1	+ 3.1	46.0	—20.8	66.8	4	0.815	17	29.7	N 77 W	3.80	10.58
1862	22.5	— 0.5	37.8	— 5.2	43.0	3	0.180	17	23.1	N 55 W	3.93	8.52
1863	22.4	— 0.6	41.5	—19.8	61.3	7	1.450	12	22.0	N 23 W	2.27	10.13
1864	24.3	+ 1.3	45.0	—15.0	60.0	2	0.397	14	9.5	S 84 W	6.48	10.11
1865	22.4	— 0.6	42.2	—10.0	52.2	5	0.810	11	16.8	N 23 W	3.96	8.23
1866	22.5	— 0.5	45.0	— 8.0	53.0	3	0.830	12	16.9	S 80 W	5.14	9.40
1867	28.9	+ 5.9	44.0	0.2	43.8	8	1.328	13	13.4	N 57 W	1.58	8.85
1868	17.2	— 5.8	45.0	—11.5	56.5	1	0.040	16	32.8	N 69 W	3.23	10.84
1869	25.0	+ 2.0	46.0	— 1.0	47.0	2	0.165	19	39.7	N 34 W	4.18	10.04
Results to 1868	22.95	.....	44.34	—7.35	51.69	4.17	0.965	12.07	18.35	N 69 W	3.10	8.53
Excess for 1869	+ 2.01	.....	+ 1.66	+ 6.35	— 4.69	— 2.17	0.800	+ 6.93	+ 21.35	...	...	+ 1.51

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—MARCH, 1868.

Latitude—43° 39′4 *North*. *Longitude*—5*h*. 17*m*. 33*s*. *West*. *Elevation above Lake Ontario*, 108 *feet*.

Day.	Barom. at temp. of 32°				Temp. of the Air.				Excess of Mean above Normal	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.				Rain in inches.	Snow in inches
	6 A.M.	2 P.M.	10 P.M	Mean.	6 A.M	2 P.M.	10 PM	MN'N		6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'.	M'N		
					°	°	°	°	°																			
1	29.798	29.658	29.535	29.6650	8.6	23.0	19.4	16.83	— 8.73	.058	.077	.088	.074	91	63	83	79	Calm.	s w b w	s b w	s 24 w	0.0	8.0	3.5	3.70	4.10	...	0.1
2	.353	.345	.431	.3812	17.9	28.4	27.7	25.22	— 0.58	.091	.126	.142	.122	94	81	94	89	Calm.	Calm.	s b w	w	0.0	0.0	1.0	1.64	2.33	...	1.0
3	.583	.644	.558	.5968	26.2	34.2	32.0	30.63	+ 4.62	.124	.147	.158	.141	87	75	87	83	w n w	s s w	s w	s 79 w	10.7	13.4	12.0	7.22	11.62	...	...
4	.640	.820	.815	.7706	11.1	5.3	0.6	5.12	—21.13	.060	.041	.040	.045	83	72	88	80	n n w	n n w	n w b w	n 33 w	21.0	12.0	6.8	7.43	8.43	...	...
5	.705	.501	.370	.5102	—4.1	16.1	14.7	9.25	—17.27	.033	.068	.072	.059	93	75	85	84	Calm.	s w	w s w	s 64 w	0.0	20.6	8.6	9.19	9.32	...	0.1
6	.269	.507	.890	.5912	14.3	15.3	11.4	13.83	—12.93	.071	.062	.062	.062	85	61	85	75	w s w	w b n	n w b w	n 55 w	2.0	19.0	9.0	12.72	13.33	...	...
7	30.060	30.011	—	—	12.2	19.4	—	—	—	.059	.080	—	—	78	76	—	—	s w b w	s w	w s w	s 61 w	3.2	10.5	8.6	8.59	8.72	...	...
8	29.897	29.850	.792	.8407	20.5	31.3	26.6	26.12	— 1.18	.093	.100	.106	.101	85	56	73	72	Calm.	w b s	Calm.	s 78 w	0.0	8.8	0.0	3.64	3.76	...	...
9	.798	.732	.678	.7293	21.9	35.3	32.7	29.97	+ 2.42	.105	.153	.165	.138	89	75	88	82	Calm.	s s w	Calm.	s 72 w	0.0	11.0	0.0	1.28	4.71	...	Inap.
10	.553	.279	.475	.4270	29.1	16.1	9.3	18.12	— 9.76	.148	.081	.06	.096	92	90	93	89	n n s	n n s	n w	n 10 w	9.2	12.6	26.2	10.69	13.57	...	8.0
11	.775	.771	.723	.7537	1.0	19.7	15.	11.68	—16.45	.041	.071	.067	.059	88	66	83	78	w b n	s w b w	w b s	s 84 w	1.6	1.5	3.5	1.62	1.71	...	...
12	.692	.496	.266	.4680	1.0	26.6	25.2	15.77	— 9.73	.041	.072	.115	.081	88	49	85	77	Calm.	s b w	s b w	s 35 w	0.0	9.0	7.0	6.68	8.25	...	2.5
13	.380	.432	.479	.4425	19.0	28.8	21.2	22.82	— 5.95	.091	.100	.092	.092	89	62	81	76	w b s	w s w	Calm.	s 53 w	11.8	8.6	0.0	5.96	7.09	...	...
14	.259	.377	—	—	27.7	32.0	—	—	—	.135	.085	—	—	89	45	—	—	s s e	w b n	n w	n 78 w	12.0	28.5	12.7	13.43	16.52	...	...
15	.741	.831	.924	.8482	16.8	23.0	10.0	15.40	—14.02	.080	.068	.054	.061	85	47	78	71	n w b n	n n w	Calm.	n 26 w	9.6	12.8	0.0	7.10	7.13	...	...
16	.924	.892	.819	.8723	2.4	23.0	18.2	13.92	—15.83	.041	.068	.047	.052	83	47	60	64	Calm.	s w b w	Calm.	s 72 w	0.0	10.6	0.0	3.78	3.98	...	...
17	.785	.752	.854	.8008	5.3	24.4	13.2	15.28	—14.86	.046	.075	.066	.065	82	57	83	73	Calm.	w b s	w n w	w	0.0	11.0	2.0	5.73	5.85	...	...
18	.949	.922	.912	.9307	11.8	31.6	26.5	23.80	— 6.63	.063	.082	.104	.086	87	45	75	69	w n w	w b s	s w b w	s 77 w	7.2	13.8	4.2	5.66	5.95	...	...
19	.8.7	.636	.399	.5896	17.6	29.1	29.8	26.47	— 4.32	.088	.148	.154	.132	92	92	93	90	Calm.	s s e	n n e	n 57 e	0.0	3.5	5.2	3.66	4.70	...	1.2
20	.334	.412	.663	.4927	26.6	32.2	15.4	24.28	— 6.83	.134	.126	.059	.106	93	69	66	77	n	n n w	n n w	n 21 w	7.0	19.2	10.0	13.84	14.20	...	0.1
21	.909	30.017	—	—	1.7	16.1	—	—	—	.044	.068	—	—	91	75	—	—	n	n b w	n e b n	n 2 w	6.0	3.0	3.8	3.38	3.72	...	...
22	30.049	29.837	.618	.8123	17.2	24.8	27.3	24.18	— 7.65	.081	.085	.139	.102	85	63	94	77	e b s	e b s	e b s	s 76 e	4.6	19.0	12.6	12.92	13.21	...	2.0
23	29.646	.732	.740	.7110	21.9	33.1	29.8	28.82	— 3.37	.106	.145	.133	.129	89	76	80	81	n	s w	Calm.	n 88 w	12.5	12.0	0.0	4.05	5.89	...	...
24	.826	.932	.967	.9225	25.9	27.3	21.2	24.55	— 8.02	.128	.056	.079	.090	91	37	70	69	n w	n n w	Calm.	n 17 w	10.6	7.8	0.0	3.65	3.93	...	...
25	30.027	.961	.849	.9268	16.5	32.9	29.8	27.77	— 5.17	.083	.103	.140	.107	90	54	84	71	n e b e	e	n e b e	n 78 e	2.0	9.0	7.4	7.63	8.08	...	...
26	29.592	.392	—	—	35.3	36.7	—	—	—	.198	.206	—	—	96	94	—	—	e n e	e b n	s w b w	n 78 e	10.5	7.6	2.4	2.70	6.04	0.215	...
27	.500	.629	.718	.6323	38.8	45.4	32.7	38.92	+ 5.23	.204	.179	.165	.182	86	59	88	78	w b s	s w b w	Calm.	s 81 w	6.6	2.2	0.0	2.24	3.69	...	...
28	.679	.594	—	—	34.9	38.1	—	—	—	.195	.195	—	—	96	86	—	—	e n e	e n e	n b n	n 71 e	5.0	17.2	11.9	12.84	13.03	...	...
29	.403	.378	.316	.3608	39.6	37.8	36.0	37.73	+ 3.28	.219	.217	.206	.214	90	95	97	94	n e	e b n	e n e	n 61 e	9.0	13.0	4.6	8.03	8.43	0.660	...
30	.197	.178	.302	.2365	36.3	41.7	38.5	38.83	+ 3.72	.202	.237	.208	.212	94	69	89	90	n	w b n	n w b w	n 47 w	5.0	7.0	17.0	11.64	12.29	.110	...
31	.486	.606	.679	.5963	32.7	33.4	28.4	31.03	— 3.55	.165	.120	.105	.130	88	62	66	72	n w	n w b n	n n w	n 30 w	25.0	20.6	9.8	14.54	14.99	...	...
	29.658	29.6436	29.6458	29.6496	18.30	27.80	22.51	23.06	— 6.91	.100	.107	.109	.105	88	66	83	78	.....	.....	.....	.....	6.20	11.38	6.12	...	8.02	0.986	15.0

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR MARCH, 1869.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....30.104 at 8 a.m. on 7th } Monthly range=
Lowest Barometer.....29.178 at 2 p.m. on 30th } 0.926 inches.

Self-registering Ther.
- Maximum Temperature .....46°8 on 27th } Monthly range=
- Minimum Temperature.....—5°4 on 5th } 52°.2
- Mean Maximum Temperature.....31°21 } Mean daily range=
- Mean Minimum Temperature .....15°73 } 15°.48
- Greatest daily range.....27°8 from a.m. to p.m. of 12th.
- Least daily range ..... 5°4 from a m. to p.m. of 31st.

Warmest Day.....27th...Mean Temperature.....38°92 } Difference=33°.80
Coldest Day..... 4th...Mean Temperature..... 5°12 }

Maximum Radiation. {Solar .....70°0 on 14th } Monthly range= 88°.4
{Terrestrial.....—18°4 on 5th }

Aurora observed on 5 nights, viz.:—8th, 11th, 13th, 17th and 31st.

Possible to see Aurora on 15 nights; impossible on 16 nights.

Snowing on 9 days; depth 15.0 inches; duration of fall 61.5 hours.

Raining on 3 days; depth 0.985 inches; duration of fall 32.0 hours.

Mean of Cloudiness—0.60.

Resultant Direction N. 52° W.; Resultant Velocity 2.86.

Mean Velocity 8.02 miles per hour.

Maximum Velocity 35.4 miles, from noon to 1 p.m. of 14th.

Most Windy day 14th; Mean Velocity 16.52 miles per hour.
Least Windy day 11th; Mean Velocity 1.71 miles per hour.

Most Windy hour 1 p.m.; Mean Velocity 11.71 miles per hour.
Least Windy hour mid't.; Mean Velocity 4.99 miles per hour.

Solar haloes observed on 3rd, 6th, 7th, 8th, 13th, 14th, 15th, 17th, 19th, 22nd and 25th.

Lunar haloes observed on 1st, 3rd, 20th, 23rd, 24th and 25th.

29th March. Robins seen.

COMPARATIVE TABLE FOR MARCH.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velo'y	Mean Velocity
	°	°	°	°	°					°		
1841	27.7	— 2.1	54.6	— 6.7	61.3	5	1.170	7	...	...	...	0.51 lbs
1842	35.8	+ 6·0	70.3	15.1	55.2	4	3.150	8	...	...	...	0.70
1843	21.3	— 8.5	39.9	— 2.5	42.4	2	0.625	18	25.7	...	...	1.18
1844	31.3	+ 1.5	50.8	9.6	41.2	8	2.470	8	14.0	...	...	0.57
1845	35.4	+ 5.6	62.7	6.6	56.1	5	inap.	8	2.8	...	...	0.66
1846	33.1	+ 3.3	49.6	8.3	41.3	9	1.905	5	2.3	...	...	0.30
1847	26.2	— 3.6	43.9	5.6	38.3	5	0.850	6	4.2	...	...	0.71
1848	28.6	— 1.2	58.6	0.0	58.6	5	1.220	6	9.7	N 66 W	2.03	5.80mls
1849	33.5	+ 3.7	53.0	15.1	37.9	7	1.525	2	2.3	N 3 W	1.48	5.37
1850	29.8	0.0	46.5	7.2	39.3	2	0.745	7	11.2	N 52 W	2.62	7.62
1851	32.4	+ 2.6	59.3	12.0	47.3	3	0.770	9	8.8	N 21 W	1.93	7.65
1852	27.7	— 2.1	44.8	— 7.4	52.2	8	3.080	12	19.5	N 8 W	0.71	5.81
1853	30.6	+ 0.8	56.3	0.0	56.3	6	1.080	8	7.1	N 58 W	2.60	5.96
1854	30.7	+ 0.9	55.1	7.4	47.7	9	2.425	3	2.8	N 53 W	3.39	8.03
1855	28.5	— 1.3	49.4	— 2.9	52.3	5	1.485	11	18.1	N 88 W	4.76	9.95
1856	23.1	— 6.7	41.4	—14.0	55.4	0	0.000	12	16.2	N 71 W	7.68	11.39
1857	27.8	— 2.0	57.6	— 5.5	63.1	4	0.335	15	11.3	N 63 W	6.63	10.84
1858	28.4	— 1.4	55.4	— 5.5	60.9	10	0.917	6	0.2	N 58 W	5.45	8.56
1859	36.3	+ 6.5	54.2	9.8	44.4	15	4.054	8	1.0	N 64 W	1.96	10.39
1860	34.5	+ 4.7	67.0	12.8	54.2	5	0.882	11	2.4	N 64 W	7.61	12.41
1861	26.9	— 2.9	47.4	— 5.2	52.6	8	2.125	14	7.1	N 54 W	4.33	10.56
1862	28.8	— 1.0	43.2	8.0	35.2	8	2.560	11	18.5	N 12 W	2.50	9.38
1863	25.8	— 4.0	42.2	— 4.0	46.2	4	0.687	17	11.4	N 27 W	2.62	9.37
1864	29.1	— 0.7	50.2	8.0	47.2	9	1.690	12	8.7	N 53 W	2.29	8.41
1865	33.6	+ 3.8	55.6	— 3.5	59.1	10	3.060	12	18.9	N 61 W	2.16	8.80
1866	27.6	— 2.2	45.8	7.5	38.3	6	1.915	18	7.2	N 73 W	6.84	11.51
1867	26.6	— 3.2	46.8	8.0	43.8	6	0.617	14	33.4	N 34 W	2.12	8.52
1868	31.3	+ 1.5	59.0	—15.6	74.6	7	2.660	5	4.2	N 21 W	2.12	8.38
1869	25.1	— 6.7	46.8	— 5.4	52.2	3	0.985	9	15.0	N 52 W	2.86	8.02
Resu'ts to 1868.	29.85	...	52.16	2.09	50.08	6.38	1.629	9.69	10.16	N 57 W	3.31	8.80
Excess for '69	— 6.79	...	— 5.36	— 7.48	+ 2.12	— 3.38	— 0.644	— 0.69	+ 4.85	...	...	— 0.78

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—APRIL, 1869.

Latitude—43° 39′4 *North*. *Longitude*—5h. 17m. 33s. *West*. *Elevation above Lake Ontario*, 108 *feet*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.				Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 PM	MEAN.		6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M	2 P.M	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M	10 P.M.	Res'l-tant	MEAN		
					°	°	°	°	°																		
1	29.684	29.538	29.272	29.4863	24.1	29.8	29.8	27.13	— 8.47	.107	.102	.133	.110	82	62	80	74	N E b N	E	E	N 82 E	8.0	10.4	21.4	10.99	11.72	...	.3
2	.216	.315	.468	.3460	33.4	36.0	27.0	31.95	— 4.03	.163	.162	.129	.149	85	76	88	82	S W	S W b S	N W	N 68 W	6.4	11.8	11.8	8.26	10.08	...	inap.
3	.496	.512	.524	.5087	22.3	27.7	25.2	24.87	—11.50	.101	.099	.093	.096	85	64	68	72	W N W	N W b W	W b S	N 75 W	12.0	17.2	7.2	13.38	13.88	...	inap.
4	.425	.364	—	—	22.3	28.0	—	—	—	.100	.109	—	—	83	71	—	—	W	W	W N W	S 89 W	14.5	16.6	5.3	10.75	11.17	...	.1
5	.2 6	.143	.122	.1552	30.6	39.2	38.1	36.50	— 0.63	.152	.180	.187	.172	89	75	81	80	W S W	W	W	S 77 W	7.7	17.5	4.0	9.04	9.23	...	...
6	.129	.243	.366	.2535	34.9	40.3	29.1	35.25	— 2.25	.161	.106	.124	.126	79	41	78	62	S W b W	W	Calm	N 75 W	5.0	18.8	0.0	8.99	9.30	...	...
7	.392	.422	.420	.4127	29.1	42.8	35.6	36.67	— 1.23	.133	.101	.159	.132	83	35	76	63	Calm	W	S W	S 65 W	0.0	13.5	8.0	6.93	8.47	...	inap.
8	.482	.562	.635	.5668	30.9	37.0	32.0	33.32	— 4.97	.141	.116	.143	.136	81	53	79	72	N W b W	N W N	N N W	N 55 W	15.0	18.4	5.8	11.35	11.56	...	...
9	.639	.657	.740	.6852	28.4	39.6	31.6	33.37	— 5.30	.134	.107	.126	.124	86	43	70	67	N W b N	N W b N	N b W	N 9 W	3.6	6.0	5.2	7.36	7.75	...	...
10	.786	.745	.724	.7518	30.6	40.3	31.3	34.37	— 4.67	.138	.091	.115	.115	80	35	65	60	N b W	N W b N	N b W	N 9 W	6.0	10.8	8.0	8.74	9.01	...	...
11	.692	.656	—	—	28.4	39.9	—	—	—	.134	.121	—	—	86	49	—	—	N	S b W	N b W	N 17 W	8.2	2.5	6.7	2.63	4.72	...	...
12	.632	.612	.631	.6230	30.9	39.9	33.8	34.68	— 5.12	.127	.121	.125	.131	73	49	65	66	N W b N	S E	N N W	N 23 W	8.2	3.5	6.0	4.81	6.61	...	.1
13	.628	.636	.708	.6630	31.3	40.7	31.3	34.60	— 5.58	.115	.076	.100	.099	65	29	56	51	N W	N N W	N N W	N 28 W	4.8	10.5	7.4	10.49	10.88	...	...
14	.766	.788	.867	.8180	29.8	46.4	36.7	38.20	— 2.37	.124	.075	.120	.108	75	24	55	51	N W b W	N W b W	W b N	N 60 W	8.4	11.2	6.8	5.67	6.75	...	...
15	.912	.834	.774	.8302	28.8	47.9	37.4	38.75	— 2.18	.129	.165	.170	.159	81	48	75	68	Calm	S S E	E N E	S 35 E	0.0	8.8	1.6	3.11	4.16	...	...
16	.728	.585	.359	.5390	36.0	59.4	48.2	48.65	+ 7.33	.180	.200	.189	.199	85	39	55	61	Calm	S S W	S S W	S 51 W	0.0	12.8	3.2	5.56	7.47	.240	...
17	.363	.427	.481	.4322	41.7	52.2	41.0	45.03	+ 3.33	.237	.284	.192	.230	89	73	75	77	W N W	W S W	N N W	N 89 W	18.0	9.8	8.6	9.56	11.36	inap.	...
18	.612	.564	—	—	35.6	41.7	—	—	—	.159	.183	—	—	76	69	—	—	W	E b N	E b N	N 71 E	0.4	2.2	13.3	9.25	9.62	1.490	...
19	.169	.174	.285	.2010	40.7	47.9	45.4	44.72	+ 2.28	.231	.288	.292	.272	91	86	96	92	E	E S E	E b N	N 78 E	11.8	6.8	11.0	6.19	6.90	inap.	...
20	.195	28.920	28.952	.0113	43.5	58.7	45.4	49.75	+ 6.93	.259	.442	.253	.321	92	90	83	88	E N E	E N E	S W	S 58 W	10.0	8.0	18.4	2.97	10.08	.635	...
21	.039	29.173	29.506	.2662	43.5	41.7	37.8	41.12	— 2.07	.204	.167	.138	.172	72	62	60	65	W	W b S	W b N	N 88 W	15.0	21.0	20.0	18.33	18.70	inap.	...
22	.762	.844	.880	.8395	37.1	48.6	39.9	42.58	— 0.97	.166	.221	.206	.196	75	64	84	71	W	S S W	N W b N	N 71 W	7.0	8.6	1.0	3.62	7.29	...	...
23	.862	.669	.532	.6752	40.3	45.3	39.6	42.03	— 1.92	.228	.207	.194	.206	91	68	79	77	E	E b N	N E b E	N 81 E	9.0	12.6	0.5	6.81	8.25	inap.	...
24	.601	.601	.659	.6217	41.4	56.2	42.1	47.70	+ 3.40	.221	.275	.127	.213	85	60	46	63	Calm	S W	N W	N 58 W	0.0	5.5	20.5	10.43	11.33	.010	...
25	.760	.772	—	—	39.2	55.1	—	—	—	.180	.145	—	—	75	33	—	—	N W	W	W S W	N 66 W	17.0	12.8	5.0	10.07	11.33	...	...
26	.651	.575	.570	.5995	45.4	70.2	51.1	55.56	+11.93	.198	.232	.246	.238	65	31	64	53	W S W	W b S	Calm	N 87 W	3.6	17.0	0.0	7.33	7.55	...	...
27	.604	.555	.551	.5627	50.8	49.3	42.8	49.32	+ 3.90	.233	.221	.250	.239	63	63	90	70	W b N	E b N	S W b S	N 84 E	1.2	4.8	2.0	2.19	3.22	.590	...
28	.551	.482	.419	.4757	45.0	58.7	52.2	51.67	+ 5.90	.269	.273	.265	.267	90	55	67	70	N N W	N E b N	N E	N 17 E	1.0	6.0	2.0	4.96	7.17	...	...
29	.489	.573	.661	.5895	41.4	44.6	38.8	41.87	— 4.73	.214	.180	.186	.183	81	61	79	71	N E b E	S E b S	N b W	N 32 E	9.4	9.0	6.2	8.42	7.03	...	...
30	.704	.674	.584	.6478	35.3	45.0	38.5	40.78	— 5.75	.119	.072	.106	.093	57	22	44	37	N b E	S b E	N E b N	S 79 E	5.4	4.2	3.6	3.13	4.73	...	...
M	29.5276	29.5100	29.5246	29.5216	35.66	45.55	37.76	40.06	— 1.04	.172	.176	.168	.173	80	54	71	68	.....	.....	.....	.....	7.22	10.62	7.35	.....	8.91	2.965	0.5

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR APRIL, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 29.912 at 6 a.m. on 15th.
Lowest Barometer . . . . . 28.896 at 4 p.m. on 20th. } Monthly range= 1.016 inches.

Self-registering Ther.
- Maximum temperature . . . . 72°2 on 26th.
- Minimum temperature . . . . 16°6 on 15th. } Monthly range=55°6
- Mean maximum temperature . . 48°03
- Mean minimum temperature . . 32°28 } Mean daily range=15°75
- Greatest daily range . . . . . 32°4 from a.m. to p.m. of 15th.
- Least daily range . . . . . 5°8 from a.m. to p.m. of 21st.

Warmest day . . . 26th...Mean temperature . . . 56°95
Coldest day . . . . 3rd ...Mean temperature . . . 24°87 } Difference=32°08.

Maximum Solar Radiation . . . . . 84°0 on 26th.
Terrestrial . . . . . 10°5 on 15th. } Monthly range=73.5

Aurora observed on 12 nights, viz.:—2nd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 13th, 15th and 29th.

Possible to see Aurora on 22 nights; impossible on 8 nights.

Snowing on 6 days; depth 0 5 inches, duration of fall 14.1 hours.

Raining on 9 days; depth, 2.965 inches; duration of fall, 23.4 hours.

Mean of cloudiness=0.61.

Resultant direction, N. 45° W.; resultant velocity, 2.93.

Mean velocity, 8 91 miles per hour.

Maximum velocity, 26.4 miles, from 3 to 4 p.m. of 21st.

Most windy day, 21st; mean velocity, 18 70 miles per hour.

Least windy day, 27th; mean vel city, 3.22 miles per hour.

Most windy hour, 8 a.m.; mean velocity, 11 58 miles per hour.

Least windy hour, 7 p.m.; mean velocity, 6.65 miles per hour.

Solar haloes recorded on 1st. 5th, 7th, 16th and 27th; Lunar halo on 26th.

Thunder storms on 18th 20th and 27th. that on the 18th being the first of the season and accompanied by a heavy fall of rain. Fog on 15th and 18th.

April 8th. Blue Birds seen. 14th. Large flocks of Pigeons. 16th. Frogs first heard. 17th. Swallows seen. 30th. Yellow Woodpeckers seen.

A very grand display of aurora, occupying more or less the whole sky, took place on the night of the 15th. and continued from dusk till daylight on the following morning. Throughout the day and night a considerable magnetic disturbance was going on.

COMPARATIVE TABLE FOR APRIL.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1841	39.2	— 1.8	64.8	19.9	44.9	3	1.370	3	...	...	...	0.51 lbs.
1842	43.7	+ 2.7	89.8	20.1	69.7	8	3.740	2	...	...	...	0.57
1843	40.9	— 0.1	71.6	14.7	56.9	7	3.185	3	0.1	...	...	0.46
1844	47.5	+ 6.5	74.6	14.9	59.7	10	1.515	1	Inap	...	...	0.24
1845	42.1	+ 1.1	66.7	15.5	51.2	11	3.290	4	1.5	...	...	1.00
1846	44.0	+ 3.0	81.8	24.2	57.6	10	1.300	2	1.3	...	...	0.55
1847	39.2	— 1.8	65.1	9.3	55.8	8	2.870	2	4.0	...	...	0.59
1848	41.3	+ 0.3	65.1	22.7	42.4	5	1.455	1	0.5	N 77 W	1.46	4.89 miles.
1849	39.0	— 2.0	72.0	15.5	56.5	10	2.655	2	1.7	N 43 W	3.14	7.50
1850	37.9	— 3.1	65.7	18.0	47.7	7	4.720	2	1.1	N 39 W	1.12	7.64
1851	41.3	+ 0.3	59.3	25.8	33.5	11	2.295	3	1.2	N 14 E	2.52	8.07
1852	38.2	— 2.8	53.8	20.0	33.8	6	1.990	4	9.4	N 23 E	2.44	6.68
1853	41.9	+ 0.9	65.7	25.0	40.7	10	2.625	1	1.0	N 12 W	1.95	5.20
1854	41.0	0.0	64.5	20.2	44.3	12	2.685	4	2.7	N 50 E	2.57	6.81
1855	42.4	+ 1.4	69.4	10.7	58.7	8	2.030	3	1.6	N 36 W	3.99	7.57
1856	42.3	+ 1.3	72.2	14.2	58.0	13	2.780	3	0.1	N 29 E	1.64	6.05
1857	35.4	— 5.6	52.0	5.9	46.1	10	1.755	11	12.9	N 60 W	4.15	10.24
1858	41.5	+ 0.5	65.2	21.8	43.4	13	1.642	2	0.1	N 14 W	1.64	9.57
1859	39.5	— 1.5	64.8	22.6	42.2	9	2.527	8	1.2	N 36 W	2.33	10.79
1860	39.5	— 1.5	61.8	19.5	42.3	11	1.282	5	0.3	N 37 W	4.10	10.30
1861	42.0	+ 1.0	67.0	23.8	43.2	12	1.619	4	6.9	N 37 E	2.31	8.90
1862	39.6	— 1.4	68.0	14.5	53.5	10	2.275	4	0.2	N 50 E	2.48	9.77
1863	42.0	+ 1.0	69.0	8.6	60.4	8	2.210	4	1.0	N 14 E	3.75	9.20
1864	40.9	— 0.1	59.4	28.1	31.3	16	3.633	3	3.5	N 41 E	3.39	7.77
1865	43.1	+ 2.1	62.5	23.0	39.5	17	3.972	6	2.0	N 84 W	2.11	8.39
1866	43.9	+ 2.9	71.0	28.5	42.5	7	1.675	2	Inap	N 42 W	3.34	7.95
1867	39.5	— 1.5	65.5	25.4	40.1	12	2 147	5	7.2	N 51 W	2.68	7.89
1868	38.0	— 3.0	64.0	9.2	54.8	7	0.990	10	5.3	N 63 W	2.43	9.24
1869	40.1	— 0.9	72.2	16.6	55.6	9	2.965	6	0.5	N 45 W	2.93	8.91
Results to 1868	40.99	... ...	66.87	18.63	48.24	9.83	2.400	3.66	2.59	N 17 W	2.02	8.12
Exc. for 1869.	—0.94	.....	+5.33	—2.03	+7.36	— 0.83	+ 0.565	+ 4.34	— 2.09	...	...	+ 0.79

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—MAY, 1869.

Latitude—43° 39′4 *North*. *Longitude*—5*h*. 17*m*. 33*s*. *West*. *Elevation above Lake Ontario*, 108 *feet*.

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Result't.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6. A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M	MEAN		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'.	MEAN.		
					°	°	°	°																				
1	29.427	29.279	29.208	29.2902	39.6	38.5	36.3	37.53	— 9.32	.125	.208	.193	.174	52	89	90	78	E N E	E b N	E N E	N 67 E	10.4	17.0	14.0	12.20	13.05	.810	inap.
2	.139	.194	—	—	35.6	45.4	—	—	—	.202	.225	—	—	97	74	—	—	N b E	N	N W	N 26 W	10.5	16.4	11.9	12.22	13.46	.100	...
3	.222	.269	.326	.2828	36.7	45.7	41.4	41.48	— 6.07	.129	.090	.136	.117	59	28	51	45	N W b W	N W	W b N	N 48 W	22.0	29.8	10.0	18.17	18.54	...	...
4	.443	.451	.540	.4832	37.1	52.9	43.9	44.92	— 2.98	.122	.137	.146	.136	55	33	50	46	N W b W	N W b N	N N W	N 29 W	13.0	22.2	14.5	15.04	15.31	...	...
5	.585	.620	.667	.6258	38.8	46.8	44.6	44.82	— 3.45	.152	.179	.217	.190	64	55	74	63	N N W	S E b S	N E	S 88 E	6.6	11.0	0.6	2.60	4.92	...	...
6	.698	.690	.674	.6880	45.0	53.3	48.2	49.55	+ 0.90	.211	.197	.207	.200	70	48	60	57	N E	S E b E	N	N 51 E	5.2	8.6	8.5	4.97	7.95	...	...
7	.700	.700	.713	.7055	49.0	56.5	50.8	52.68	+ 3.70	.187	.208	.182	.197	53	45	49	49	N N E	S S W	N	N 19 W	8.0	5.0	9.0	4.55	7.53	...	...
8	.755	.694	.645	.6908	43.9	57.2	52.9	52.92	+ 3.58	.172	.249	.318	.272	59	53	78	66	N b W	S b W	N W b N	S 78 W	7.6	8.2	8.4	0.84	3.49	inap.	...
9	.584	.528	—	—	46.4	58.7	—	—	—	.276	.285	—	—	88	57	—	—	Calm.	S	N	S 24 W	0.0	3.4	0.9	0.57	2.33	...	...
10	.576	.546	.473	.5202	48.6	55.8	50.4	52.13	+ 2.08	.211	.219	.227	.218	61	48	61	56	E N E	E b S	E N E	S 80 E	2.0	9.6	1.0	3.46	3.53	inap.	...
11	.417	.331	.370	.3708	49.3	70.6	61.2	60.55	+10.15	.271	.338	.386	.318	77	44	71	61	Calm.	S W b S	Calm.	S 44 W	0.0	15.6	0.0	5.86	6.00	...	...
12	.375	.314	.294	.3167	54.0	72.0	49.7	58.62	+ 7.90	.357	.363	.317	.346	85	47	89	72	Calm.	S E b E	E	S 89 E	0.0	5.4	10.0	4.45	4.62	.040	...
13	.256	.064	.111	.1327	45.7	59.8	50.0	51.43	+ 0.33	.259	.348	.345	.317	84	67	96	84	N E b E	E N E	E b S	N 68 E	1.0	13.4	2.6	6.65	6.73	.020	...
14	.093	.055	.087	.0785	49.3	60.1	52.6	54.12	+ 2.68	.344	.389	.300	.343	98	74	75	82	N N E	S E b S	N E	S 57 E	0.6	4.5	0.6	1.47	2.50	inap.	...
15	.087	.123	.147	.1207	47.9	55.5	49.0	51.57	— 0.22	.332	.305	.307	.317	99	69	88	83	W b S	W	Calm.	West.	0.6	12.0	0.0	2.46	4.08	inap	...
16	.103	.101	—	—	49.0	51.5	—	—	—	.287	.325	—	—	82	85	—	—	N E b N	S S W	W b N	N 75 W	2.0	9.8	15.9	9.52	11.09	.720	...
17	.307	.391	.493	.4080	43.5	48.6	41.4	44.87	— 7.62	.231	.230	.221	.231	82	67	85	78	W	W N W	Calm.	N 73 W	8.2	22.0	0.0	9.74	9.83	inap.	...
18	.523	.520	.523	.5272	40.7	47.2	47.1	45.63	— 7.18	.204	.249	.221	.225	80	76	68	73	W b N	Calm.	N W b N	N 56 W	8.0	0.0	8.5	4.07	4.38	...	...
19	.483	.456	.497	.4833	43.5	48.2	47.5	47.20	— 5.97	.223	.297	.216	.246	78	88	65	75	N N W	S W	N N W	N 29 W	5.0	1.0	13.5	6.74	6.87	inap.	...
20	.594	.613	.653	.6227	45.3	54.7	45.4	49.23	— 4.30	.226	.283	.135	.216	75	66	44	60	N W	S W	N N W	N 40 W	8.5	4.0	4.7	4.38	5.7	...	...
21	.665	.587	.647	.5945	40.3	50.4	45.4	45.97	— 7.90	.176	.208	.163	.178	69	56	49	57	N b E	S b E	N W b N	N 23 W	3.8	5.4	7.0	1.88	5.55	...	...
22	.529	.497	.550	.5270	46.4	56.5	47.9	51.05	— 3.15	.184	.193	.157	.165	58	40	46	44	N N W	S b W	N W b N	N 40 W	8.4	7.0	2.6	5.23	6.76	...	...
23	.537	.530	—	—	47.1	67.4	—	—	—	.208	.431	—	—	62	63	—	—	W	S S W	Calm.	S 32 W	2.0	6.6	0.0	1.65	1.78	...	...
24	.554	.538	.536	.5425	47.5	67.0	55.8	58.10	+ 3.20	.296	.383	.355	.344	90	57	80	72	Calm.	S S W	W S W	S 24 W	0.0	10.0	1.2	4.29	4.35	...	...
25	.540	.454	.380	.4587	52.2	69.9	60.1	62.85	+ 7.62	.327	.384	.354	.372	83	52	67	65	Calm.	S	Calm.	S 56 W	0.0	8.0	0.0	3.78	5.56	.240	...
26	.387	.499	.684	.5362	58.0	52.2	48.6	53.53	— 2.08	.394	.284	.261	.321	82	73	77	76	S W b W	N b W	N N E	N 4 W	2.8	15.0	6.2	7.07	8.02	.015	...
27	.803	.788	.772	.7847	44.1	49.6	48.2	48.10	— 7.80	.178	.165	.170	.174	61	44	50	52	N E b N	E	N E b N	N 80 E	6.5	7.8	1.6	5.79	6.08	...	...
28	.667	.560	.514	.5750	50.8	47.9	48.2	49.08	— 7.13	.230	.301	.307	.288	62	90	91	83	E b N	E b N	E N E	N 73 E	7.0	10.5	10.2	7.55	7.83	.320	...
29	.574	.667	.675	.6400	50.4	57.2	49.0	53.28	— 3.27	.340	.370	.266	.337	93	79	77	82	N N W	S W b S	Calm.	N 83 W	0.5	1.6	0.0	0.66	1.40	...	...
30	.634	.621	—	—	49.3	56.5	—	—	—	.344	.356	—	—	98	78	—	—	N E	E S E	Calm.	S 81 E	2.4	5.6	0.0	2.97	3.12	.020	...
31	.543	.488	.521	.5258	49.7	67.0	59.1	58.88	— 1.72	.338	.553	.490	.476	95	83	98	94	Calm.	S b W	Calm.	S 31 W	0.0	2.6	0.0	0.45	0.56	.420	...
	29.4924	29.4690	29.4846	29.4820	46.05	55.00	49.03	50.77	— 1.32	.239	.274	.253	.258	74	60	70	67	.....	.....	.....	.....	4.92	9.65	5.24	.....	6.55	2.805	inap.

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR MAY, 1868.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....29.803 at 8 a.m. on 27th. } Monthly range—
Lowest Barometer.....29.054 at 4 p.m. on 14th. } 0.749.

Self-registering Ther.
- Maximum Temperature .....74°2 on 11th. } Monthly range—
- Minimum Temperature .....31°4 on 2nd. } 42°8.
- Mean Maximum Temperature .....58°83. } Mean daily range—
- Mean Minimum Temperature .....42°75. } 16°08.
- Greatest daily range.....30°4 from a.m. to p.m. of 11th.
- Least daily range ..... 4°6 from a.m. to p.m. of 1st.

Warmest day.....25th...Mean Temperature.....62°85. } Difference—25°32.
Coldest day ..... 1st...Mean Temperature.....37°53. }

Maximum Radiation. { Solar .....89°8 on 11th. } Monthly range—
{ Terrestrial ... .25°4 on 4th. } 64°4.

Aurora observed on 4 nights, viz.: 3rd, 4th, 7th, and 9th.
Possible to see Aurora on 15 nights: impossible on 16 nights.
Snow on 1 day; depth inapp.; duration of fall inapp.
Raining on 16 days; depth 2.805 inches; duration of fall 57.4 hours.
Mean of Cloudiness=0.67.

Resultant Direction N. 20° W.; Resultant Velocity 2.38.
Mean Velocity 6.55 miles per hour.
Maximum Velocity 30.0 miles, from noon to 1 p.m. of 4th.

Most Windy day 3rd; Mean Velocity 18.54 miles per hour.
Least Windy day 31st; Mean Velocity 0.56 miles per hour.

Most Windy hour 1 p.m.; Mean Velocity 9.55 miles per hour.
Least Windy hour 4 a.m.; Mean Velocity 3.73 miles per hour.

May 1st, last snow of season.
3rd, last recorded ice of season.
18th, sharp frost.
Thunder or lightning recorded on 5 occasions.
Dew on 11 mornings.
Solar haloes on 6th, 12th, 14th, 27th and 30th.

COMPARATIVE TABLE FOR MAY.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Vel'y	Mean Velocity.
	°	°	°	°	°					°		
1841	50.5	— 0.9	78.0	26.5	51.5	11	2.350	1	....	...	...	0.35 lbs
1842	49.1	— 2.3	74.8	27.3	47.5	7	1.275	0	0.0	...	...	0.53
1843	49.1	— 2.3	79.8	29.2	50.6	5	1.570	0	0.0	...	...	0.52
1844	53.6	+ 2.2	78.4	28.7	49.7	14	5.670	0	0.0	...	...	0.30
1845	49.6	— 1.8	77.8	27.8	50.0	8	2.300	0	0.0	...	...	0.55
1846	55.5	+ 4.1	79.7	33.1	46.6	9	4.375	0	0.0	...	...	0.46
1847	54.4	+ 3.0	72.1	26.7	45.4	12	2.040	0	0.0	...	...	0.29
1848	54.1	+ 2.7	78.0	31.3	46.7	13	2.520	0	0.0	N 40 W	1.31	4.93 m.
1849	48.0	+ 3.4	72.2	27.9	44.3	16	5.115	0	0.0	N 51 E	1.97	5.33
1850	47.6	— 3.8	77.8	27.5	50.3	17	0.545	1	inap.	N 64 W	2.05	6.32
1851	51.3	— 0.1	73.3	25.0	48.3	12	2.950	1	0.5	N 32 W	1.59	6.34
1852	51.4	0.0	73.3	32.0	41.3	7	1.125	1	inap.	S 82 W	0.99	4.00
1853	50.9	— 0.5	78.4	32.2	46.2	17	4.420	1	inap	N 2 W	0.83	5.16
1854	52.2	+ 0.8	71.4	25.2	46.2	11	4.630	0	0.0	E	0.40	5.38
1855	53.1	+ 1.7	77.5	35.0	44.5	6	2.565	2	0.9	N 1 W	2.76	5.93
1856	50.5	— 0.9	82.2	31.2	51.0	14	4.580	1	inap.	N 4 E	3.99	9.81
1857	48.9	— 2.5	74.8	23.0	48.8	15	4.145	1	inap	N 23 W	1.14	8.13
1858	48.9	— 2.5	69.8	31.0	38.8	17	6.367	0	0.0	N 42 E	3.33	9.30
1859	55.2	+ 3.8	79.6	39.5	40.1	11	3.410	0	0.0	N 72 E	1.59	5.70
1860	55.5	+ 4.1	74.5	32.5	42.0	16	1.815	0	0.0	N 26 E	2.66	7.17
1861	47.5	— 3.9	73.0	28.0	45.0	12	3.380	1	0.5	N 47 W	3.60	9.17
1862	52.2	+ 0.8	78.5	32.4	46.1	8	1.427	0	0.0	N 52 W	2.80	7.87
1863	54.3	+ 2.9	79.0	36.4	42.6	14	3.363	1	0.1	N 56 E	0.41	5.89
1864	54.8	+ 3.4	79.0	32.2	46.8	18	4.070	0	0.0	N 7 W	1.86	5.64
1865	52.3	+ 0.9	79.0	30.0	49.0	11	4.005	0	0.0	N 3 W	1.65	5.48
1866	48.3	— 3.1	73.4	35.4	40.0	13	2.820	0	0.0	N 46 W	4.49	9.26
1867	46.5	— 4.9	65.0	24.6	40.4	18	3.220	1	inap.	N 51 W	3.55	8.40
1868	51.8	+ 0.4	75.0	33.2	39.8	16	7.670	0	0.0	N 38 E	3.16	6.67
1869	50.8	+ 0.6	74.2	13.4	42.8	16	2.805	1	inap.	N 20 W	2.38	6.55
Results to 1869.	51.44	...	76.19	30.24	45.95	11.97	3.375	0.41	0.08	N 11 W	1.06	6.77
Excess for 1868	0.64	...	1.99	1.16	3.15	+ 4.03	0.670	+ 0.59	0.08	...	...	0.22

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—JUNE, 1869.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17m. 33s. *West.* *Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.				Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M	M'N'.		6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN		
1	29.614	29.677	29.717	29.6733	59.4	69.5	56.5	62.05	+ 4.55	.473	.506	.413	.455	93	70	90	82	Calm.	s b w	Calm.	s 28 w	0.0	5.2	0.0	2.85	3.06	...	...
2	.761	.759	.761	.7598	54.4	69.5	56.2	60.50	+ 2.70	.396	.532	.394	.436	93	74	87	83	Calm.	Calm.	Calm.	s 25 e	0.0	0.0	0.0	0.39	0.47	...	...
3	.816	.731	.659	.7258	52.9	73.8	56.9	62.42	+ 4.28	.372	.502	.362	.419	92	60	78	75	Calm.	s	e s e	s 19 e	0.0	8.2	0.4	0.97	1.35	...	...
4	.597	.476	.376	.4662	58.7	66.3	60.9	61.12	+ 2.65	.384	.508	.503	.452	78	78	94	84	Calm.	Calm.	n b e	n 5 w	0.0	0.0	9.8	2.66	4.48	0.890	...
5	.305	.420	.669	.4833	55.5	55.4	45.4	51.82	— 6.95	.392	.327	.215	.304	89	74	70	76	n n w	n w b n	w n w	n 41 w	11.8	23.2	15.6	11.07	11.31	.075	...
6	.802	.857	—	—	42.1	54.4	—	—	—	.213	.308	—	—	79	73	—	—	w b n	s w b s	n b e	n 29 w	0.5	4.0	4.9	0.26	2.69	[nap.	...
7	.939	.845	.776	.8447	42.1	57.6	50.0	50.40	— 9.00	.195	.276	.304	.263	72	58	84	72	Calm.	s b e	Calm.	s 66 w	0.0	11.4	0.0	1.85	5.88	.175	...
8	.814	.910	.930	.8935	45.7	56.9	49.0	51.07	— 8.67	.249	.307	.263	.276	81	66	76	73	n w b n	Calm.	Calm.	n 19 w	10.0	0.0	0.0	1.71	2.80	...	...
9	.981	.851	.625	.8040	47.2	56.2	51.1	52.75	— 7.28	.279	.263	.278	.279	86	58	74	71	Calm.	e	e	s 85 e	0.0	16.2	9.0	8.07	8.08	.450	...
10	.487	.510	.510	.4947	50.0	66.3	62.2	55.75	— 4.62	.345	.419	.337	.370	96	64	86	83	e	w b s	n w b w	n 86 w	5.0	9.2	15.0	4.50	5.93	.375	...
11	.457	.449	.459	.4513	50.4	52.9	47.9	50.63	—10.07	.318	.266	.250	.256	86	65	74	69	w s w	w n w	w	n 73 w	2.2	12.5	3.0	9.54	9.77	...	...
12	.508	.466	.402	.4527	46.1	58.3	52.2	52.93	— 8.07	.225	.290	.348	.289	72	59	89	72	n w b w	s e	e	s 73 w	7.5	2.0	4.5	1.53	3.38	[nap.	...
13	.267	.135	—	—	54.7	59.0	—	—	—	.358	.428	—	—	84	86	—	—	e	s	s w b s	s 21 w	2.8	3.2	8.5	6.55	7.06	.050	...
14	.088	.074	.162	.1145	55.5	61.6	54.4	57.80	— 3.87	.392	.348	.346	.357	89	63	81	75	s s w	s w b s	s w	s 40 w	9.0	17.2	4.2	8.54	8.93	...	...
15	.220	.303	.424	.3257	55.5	52.9	50.0	52.15	— 9.83	.314	.306	.304	.308	71	76	84	79	s w	w	s w	n 82 w	3.5	6.2	2.0	4.76	4.92	.060	...
16	.495	.537	.627	.5632	51.1	62.3	51.1	55.78	— 6.57	.320	.259	.246	.284	85	46	65	65	Calm.	w n w	Calm.	n 74 w	0.0	16.0	0.0	6.65	7.08	.033	...
17	.756	.747	.684	.7288	52.2	66.6	56.2	59.42	— 3.18	.305	.338	.295	.314	78	52	65	63	Calm.	s e	n e b e	s 80 e	0.0	2.2	0.8	2.49	3.33	.010	...
18	.593	.480	.627	.5675	53.3	68.0	59.8	62.88	— 0.08	.301	.500	.392	.408	74	73	76	71	e b n	Calm.	n w b n	n 54 w	7.0	0.0	6.0	3.31	5.29	...	...
19	.731	.784	.662	.7103	58.3	63.7	57.6	59.87	— 3.35	.390	.428	.410	.415	80	72	86	81	n n w	s	n e b e	n 81 e	3.0	7.2	4.0	1.98	4.88	.375	...
20	.430	.384	—	—	52.9	75.3	—	—	—	.381	.570	—	—	95	65	—	—	e b n	w b n	n w b n	n 52 w	4.0	21.0	2.9	5.21	6.87	.050	...
21	.516	.500	.474	.4895	59.1	67.4	59.4	62.68	— 1.12	.464	.379	.434	.431	93	56	86	77	n e	e b s	Calm.	s 61 e	1.0	6.0	0.0	2.17	2.31	.005	...
22	.466	.453	.438	.4483	58.7	69.9	58.7	62.92	— 1.18	.419	.515	.339	.423	85	70	68	73	Calm.	s b e	s w b s	s 8 w	0.0	11.4	4.5	3.88	4.62	.075	...
23	.414	.548	.628	.5373	60.5	67.7	56.5	63.02	— 1.37	.458	.313	.378	.371	87	45	83	66	s w b w	w	Calm.	s 88 w	5.2	12.4	0.0	7.14	7.92	...	...
24	.683	.646	.711	.6830	56.5	66.6	59.4	60.90	— 3.72	.313	.378	.386	.350	68	58	76	65	n n e	s w	n	s 87 w	1.2	6.6	8.2	3.78	6.13	[nap.	...
25	.833	.833	.787	.8197	51.1	63.7	52.6	55.87	— 9.03	.246	.339	.310	.299	65	57	78	67	n w b n	s	n n e	s 47 e	0.8	5.0	1.2	0.43	3.15	...	...
26	.750	.707	.634	.6907	55.1	60.5	54.7	56.77	— 8.37	.331	.271	.337	.308	76	50	78	67	Calm.	Calm.	Calm.	n 69 e	0.0	0.0	0.0	1.57	2.23	.925	...
27	.573	.550	—	—	53.3	57.3	—	—	—	.387	.425	—	—	95	90	—	—	Calm.	s e b e	e n e	s 68 e	0.0	4.0	2.4	1.63	2.15	.090	...
28	.358	.417	.566	.4518	57.2	74.6	62.3	65.78	+ 0.13	.404	.521	.395	.455	86	60	70	72	Calm.	n w b n	Calm.	n 58 w	0.0	19.4	0.0	5.27	6.52	[nap	...
29	.590	.574	.487	.5390	62.3	74.2	64.8	67.10	+ 1.23	.510	.627	.582	.572	90	75	95	86	s w b w	s s w	s w b w	s 57 w	0.6	9.2	4.0	3.95	5.08	.125	...
30	.462	.503	.634	.5398	64.5	71.3	58.0	64.58	— 1.52	.560	.443	.314	.436	92	57	66	71	n n w	n	n n w	n 13 w	5.6	12.7	9.2	9.03	9.21	.010	...
	29.5859	29.5827	29.5934	29.5868	54.34	64.37	55.15	58.42	— 3.59	.360	.391	.351	.367	83	63	79	74	.....	.....	.....	.....	2.70	8.22	3.98	...	5.23	4.373	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JUNE, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer . . . . . 29.982 at 8 a. m. on 9th. } Monthly range—
Lowest Barometer . . . . . 29.074 at 2 p. m. on 14th. } 0.908.

Self-registering Ther.
- Maximum temperature . . . . . 81°4 on 29th. } Monthly range—
- Minimum temperature . . . . . 36°4 on 6th. } 45°0
- Mean maximum temperature . . . . . 67°37 } Mean daily range—
- Mean minimum temperature . . . . . 50°04 } 17°33
- Greatest daily range . . . . . 28°6 from a.m. to p.m. of 18th.
- Least daily range . . . . . 4°8 from a.m. to p.m. of 5th.

Warmest day . . . . 29th...Mean temperature . . . 67°10 } Difference—16°70.
Coldest day . . . . 7th...Mean temperature . . . 50°40 }

Maximum { Solar . . . . . 97°0 on 22nd } Monthly range—71°8
Radiation { Terrestrial . . . . . 25°2 on 6th }

Aurora observed on 3 nights, viz.: 5th, 7th, and 11th.

Possible to see aurora on 11 nights; impossible on 19 nights.

Raining on 22 days; depth, 4.373 inches; duration of fall, 83.5 hours.

Mean of cloudiness—0.67.

Resultant direction, N. 80° W.; Resultant velocity, 1.77.

Mean velocity, 5.23 miles per hour.

Maximum velocity, 25.5 miles, from 3 to 4 p.m. of 5th.

Most windy day, 5th; mean velocity, 11.31 miles per hour.

Least windy day, 2nd; mean velocity, 0.47 miles per hour.

Most windy hour, 3 p.m.; mean velocity, 8.88 miles per hour.

Least windy hour, 5 p.m.; mean velocity, 2.79 miles per hour.

10th. Thunder storm.
27th. Thunder storm.
29th. Thunder storm.
Hoar f[illegible]

Dew on 10 mornings.

COMPARATIVE TABLE FOR JUNE.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1841	68.6	+ 4.1	93.1	45.3	47.8	9	1.560	...	...	...	...	0.361bs
1842	55.6	— 5.9	80.2	28.1	52.1	15	5.755	...	...	...	...	0.:1
1843	58.4	— 3.1	83.3	28.2	55.1	12	4.595	...	...	...	...	0.27
1844	59.9	— 1.6	83.3	33.2	50.1	9	3.535	...	...	...	...	0.19
1845	61.0	— 0.5	84.6	38.5	46.1	11	3.715	..	...	...	...	0.27
1846	63.3	+ 1.8	84.2	39.1	45.1	10	1.920	...	...	...	...	0.32
1847	58.4	— 3.1	77.8	36.7	41.1	14	2.625	...	..	...	...	0.30
1848	62.9	+ 1.4	92.0	37.4	54.6	8	1.810	...	...	N 61 w	1.90	4.51 m.
1849	63.2	+ 1.7	84.4	35.2	49.2	7	2.020	...	...	S 71 E	0.49	3.32
1850	64.3	+ 2.8	85.6	34.2	51.4	10	3.345	...	...	S 60 W	0.38	4.54
1851	59.2	— 2.3	79.2	37.0	42.2	11	2.695	...	...	S 2 W	1.26	4.42
1852	60.8	— 0.7	86.1	37.2	48.9	10	3.160	...	...	S 76 W	1.49	4.09
1853	65.5	+ 4.0	89.5	39.2	50.3	9	1.550	...	...	N 1 W	0.10	3.73
1854	64.1	+ 2.6	92.5	35.2	57.3	9	1.460	...	...	N 24 E	0.71	4.15
1855	59.9	— 1.6	91.5	36.2	55.3	17	4.070	...	...	N 60 W	1.33	5.70
1856	62.1	+ 0.6	89.2	42.0	47.2	13	3.200	...	...	S 21 W	0.90	5.30
1857	56.9	— 4.6	76.0	35.0	41.0	21	5.060	...	...	N 49 W	1.15	7.60
1858	66.2	+ 4.7	90.2	42.5	47.7	12	2.943	...	...	S 20 E	0.25	5.53
1859	58.3	— 3.2	86.4	32.2	54.2	16	4.085	2	Inap	N 77 E	1.95	7.19
1860	63.2	+ 1.7	81.6	49.2	32.4	14	2.136	...	...	N 44 W	3.13	7.61
1861	61.3	— 0.2	87.8	41.6	46.2	13	2.320	...	....	N 39 W	2.29	6.11
1862	60.5	— 1.0	85.4	39.4	46.0	10	1.007	...	...	N 26 W	1.77	5.98
1863	60.1	— 1.4	84.8	37.4	47.4	13	1.662	...	..	N 50 W	2.26	5.24
1864	63.0	+ 1.5	93.4	34.8	58.6	5	0.570	...	...	N 55 W	1.72	4.53
1865	64.5	+ 3.0	90.2	43.0	47.2	7	2.005	...	...	S 30 W	0.60	4.06
1866	60.2	— 1.3	90.5	40.0	50.5	15	2.720	...	...	S 15 W	0.71	5.09
1867	64.3	+ 2.8	88.6	44.0	44.6	8	0.885	...	...	S 84 E	0.48	4.13
1868	62.0	+ 0.5	84.2	38.0	46.2	11	2.217	...	...	N 16 E	0.85	5.26
1869	58.4	— 3.1	81.4	36.4	45.0	22	4.373	...	...	N 80 W	1.77	5.28
Results to 1868	61.53	.....	86.27	37.85	48.42	11,38	2.741	...	...	N 61 W	0.77	5.15
Excess for 1869	—3.11	.....	—4.87	—1.45	—3.42	+ 10.62	+ 1.632	...	...	...	...	+ 0.08

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THE CANADIAN JOURNAL.

NEW SERIES.

No. LXXI.—APRIL, 1870.

THE PRESIDENT'S ADDRESS.

BY THE REV. WILLIAM HINCKS, F.L.S., F.B.S., EDIN.

PROFESSOR OF NATURAL HISTORY, UNIVERSITY COLLEGE, TORONTO.

Read before the Canadian Institute, Jan. 14, 1870.

The President requests permission to insert in the *Journal* only an abstract of his address, considering a large portion of it as being, though in his opinion suitable at the time, of local and temporary interest; whilst, as he is occupying in another way a portion of the present number of the *Journal*, he would gladly abridge where it seems to him that the full text would be now superfluous.

After acknowledging the honor again conferred upon him, and offering remarks, arising out of the occurrences of the past year, on the condition and prospects of the Institute, expressing regret at the want of union of all the Literary and Scientific Societies of Ontario in one compact body, but in other respects taking an encouraging view of our affairs, he proceeded to speak of the general progress of Science, commenting particularly on matters relating to his own studies. He adverted to the efforts made in Great Britain to obtain from the Government some more efficient aid for the promotion of knowledge; to the interesting and valuable results of recent deep-sea dredgings; to the observations of Darwin and others on the fertilization of plants, in reference to cross-fertilization and the extent of the agency of insects;

to Col. Munro's monograph on the Bambusidae, and Mr. Baker's *Synopsis Filicum* from the papers of Sir W. J. Hooker.

Here he took occasion to remark on the extent to which the combination of species hitherto accounted distinct is carried by these writers, and he conceived that if sub-division has often been carried too far, there is at present a little danger of error in the opposite direction.

A paragraph relating to the Darwinian hypothesis, it is thought proper to give at length.

In the whole field of Natural History, the controversy respecting Darwinianism is still occupying much attention. The new view is defended by several able men of known scientific eminence, whilst those who resist it lie under the disadvantage of being supposed to be influenced more by prejudice than reason. Yet in the sober English mind it cannot be said that the Darwinians gain a rapid or easy victory, and it is quite possible now that even if they cause some change in public opinion, they may by no means secure the prevalence of their own views. There are many minds to which any new doctrine, boldly maintained and pertinaciously urged, seems irresistible. Novelty alone is a strong recommendation, and there is an exceeding pleasure in being carried on by an advancing wave, and seeming to be among the foremost in progressive improvement. It is all very well if the advance is real, but this experience only can test, and history shows us abundant examples of doctrines which have triumphed for a short period, only to pass speedily to the vault of oblivion. Novelty in opinion is neither a recommendation nor an objection. There is far too much yet to be done in the vast fields of knowledge, for it to be admitted as a sign of error. There are too many examples continually occurring of ingenious speculation, unsupported by sufficient evidence, for it to rank as a presumption of truth. A restless grasping after novelty is a serious fault; setting it up as a bar against the examination of evidence is certainly not a less injurious one. If we may implicitly believe a statement in the new periodical devoted to natural science, *Nature*, whilst the English are still discussing the possibility of Darwinianism being true, the Germans have so thoroughly adopted it that it has become the foundation for new systems—the starting point for fresh inquiries. This may appear to most of us to be going somewhat too fast; but then *Nature* may be presumed to be the special organ of the extreme Darwinians, and might be thought to see facts through a somewhat colored medium; and supposing that there is no exaggeration in the statement,

it might have been anticipated, from the general state of opinion in England, that the new hypothesis would there have to work its way through many difficulties which would never occur to those who are imbued with the German transcendental philosophy; and it depends on the light in which we regard that philosophy, whether we are to consider the Germans as enjoying an advantage, or as peculiarly exposed to error. I am obliged to confess that if my reason compelled me to adopt the Darwinian hypothesis, its opposition, as I understand it, to cherished and valued sentiments respecting creative wisdom and goodness, and a perfect divine plan in nature, would cause me great pain. I do not accept this as any reason for not fairly examining the evidence, since, on the whole and ultimately, *truth* or knowledge of what really is, can alone benefit ourselves and our race;—false opinions can never be beneficial or desirable; and nothing can more dignify a frail mortal than the earnest, disinterested, unprejudiced pursuit of truth, on as many subjects as possible, even to the latest period of life. Science has its own sphere, and its own means of inquiry; and if we can learn anything with a reasonable degree of assurance, there can be no doubt that we, or those who follow us here, will enjoy the benefit. But such a feeling as I have acknowledged on the subject may justifiably quicken our perception of objections or difficulties, render us specially cautious in weighing arguments, and guard us against unsound though brilliant speculative plausibilities. Grant it to be proved that species are modified by time and circumstances, and even that incidental variations of offspring may be permanently preserved, it would be very rash, observing the essential differences of type in the grand divisions of organized beings, and the mutual relations of secondary groups as analogous modifications of each more general type, to affirm either that all beings have arisen by gradual change from a primitive element, or that the changes which do or may take place are merely those which happen to be preserved out of an indefinite number which may arise. Nothing is to me more evident than that both seemingly permanent specific and higher differences, and varieties which have no pretensions to permanence, depend on the comparative development of different elements of a common plan, from which it seems to follow both that the non-existence from the commencement of living nature of all the distinct plans of structure, is in the highest degree improbable, and that the tendency of development, sometimes in one direction, sometimes in another, among the same primitive elements, must produce an harmo-

nious system, whilst the preservation of the forms best adapted to a situation amongst a great number of variations arising without order must produce a confused mass of objects having no regular relations, and incapable of being reduced to a common system. Which of these actually prevails in nature, I cannot for a moment hesitate in deciding, and consequently I must maintain that if there is variation it must be within definite limits, and according to a fixed plan, so as to maintain a uniform order and harmony in the whole system. One more observation I may venture upon, that the latest observations of facts lessen considerably the supposed necessity for enormous periods of time to allow of known geological changes, diminishing, therefore, the countless ages which are required by the Darwinians for the production of the existing system of nature.

Declining any attempt, on such an occasion, to discuss generally the arguments on the subject, he referred to Dr. Lionel Beale's work on Protoplasm, and in conclusion noticed the work of his son, the Rev. Thomas Hincks, B.A., on British Hydroid Zoophytes, of which he laid a copy on the table for the inspection of the members present.

AN ATTEMPTED IMPROVEMENT IN THE ARRANGEMENT OF FERNS,

AND IN THE NOMENCLATURE OF THEIR SUB-DIVISIONS.

BY THE REV. WILLIAM HINCKS, F.L.S., F.E.S., EDIN., &c.

PROFESSOR OF NATURAL HISTORY IN UNIVERSITY COLLEGE, TORONTO, PRESIDENT OF THE CANADIAN INSTITUTE.

PRELIMINARY NOTE.—In offering to those interested in Botany, and especially in the beautiful tribe of Ferns, through the Canadian Institute, some views and plans which he hopes may not be entirely worthless, the author has thought it desirable, as immediately addressing a Society of very varied scientific pursuits, who could not be supposed to be generally familiar with the subject brought before them, to give a very concise sketch of the progress of the knowledge of Ferns, and of some peculiarities in their structure, which would not have been deemed necessary had the paper come before a society of botanists, but may, he hopes, be excused as not being inappropriate in the actual circumstances.

Ferns, as a distinct group, are well known even to those who pay least attention to the differences among plants, and are much admired both by observers of nature and by cultivators.

Though entirely without flowers, the gracefulness of their varied forms, their feathered clumps of fronds, the curved growth of their young leaves, and the rich verdure often displayed by their mature foliage, early interest us all; and if they have become a peculiarly favorite and fashionable subject of culture for the glass-case in the drawing-room and for the hot-house, green-house and rock-work, this is no more than a homage naturally paid to eminent beauty, elegance and singularity, in a kingdom of nature which abounds in whatever can charm the senses or gratify curiosity.

We must by no means be content to take our ideas of ferns from the few species, beautiful and attractive as they are, which offer themselves to our notice in a climate which is far from being favorable to their growth. Of thousands that are known, whilst a few small tropical islands may yield several hundred in each, the whole of this great Northern continent has only about seventy proper ferns; and fine as some of ours are, they fail to give us any assistance in forming a conception of the sometimes majestic, sometimes airy beauty of the tree ferns, the peculiar gracefulness of the climbing ferns, and the exquisite delicacy of the maidenhairs and the filmy ferns. There is something so specially characteristic in this race of plants, that with all their varieties of form and habit of growth, they have been uniformly recognised as a natural assemblage; and it seems an easy task, even for the least experienced, to distinguish a fern even from those plants which most nearly resemble it; but strikingly as this is the case, the task of reducing the numerous species to genera, tribes and orders, has always been found a difficult one, and is far from being yet satisfactorily accomplished. Upon the genera I shall on this occasion offer no remarks, beyond a review of the principles upon which they ought to be founded; but in respect to the higher groups, as to their order, mutual relations, proper limits, and the most correct and convenient mode of naming them, I propose laying before you the conclusions at which I have arrived, as the result of careful and long continued study, not without the hope of contributing something to the advancement of a favorite section of botanical science, though chiefly by putting into a better and more useful form the labours of others in the same field.

It was early believed that the dust-like substance, as it appeared to the unassisted eye, observed scattered or in masses, on the under surface of the leaves, or, as they are technically called, *fronds* of ferns, was of the nature of seed; but how it was produced, or how the germs were

fertilized, remained to our own times a great mystery; and even respecting the accompaniments and special arrangements of these essential parts, the progress of correct observation was very gradual. The first attempts at forming generic groups were founded only on the general figure of the frond, which never could afford any good results, since we have closely resembling forms of which the fructification is entirely different, and there can be no question which circumstance is most important. Linnæus introduced as a character the shape and position of the heaps or bundles of capsules (now named *sporangia*), to which heaps the name *sori* is assigned. Sir James Edward Smith added the consideration of the membranous cover (called the *indusium*) raised from the surface of the frond, folded back from its edge, or expanded at the termination of a vein, and where it occurs protecting the cluster of sporangia, whilst it has remarkable variations in figure, mode of attachment, and position in regard to the sorus. The importance of this character has led to many applications of it which improved observation has justified. Robert Brown first employed the venation of the frond, though using it rather for sectional divisions than for genera. Presl, and John Smith of Kew, have worked up this subject fully, making it a foundation for genera, which have been extensively adopted by recent writers, though Sir W. J. Hooker, in his great work, the *Species Filicum*, abandons many of them, and receives others only as sectional divisions. He had previously, in the "Genera of Ferns," in publishing the admirable microscopic drawings of Francis Bauer, with many valuable additions, given the characters of many new genera of Brown, J. Smith, Mayer, Presl, &c., without otherwise indicating his opinion than by a caution in the preface against his being supposed to adopt them all; but when he applied himself to his great work on the species, he was led to admit venation only as a character of subgenera or sections. His judgment has great weight, yet it must be acknowledged that the venation affords a striking, intelligible and convenient character, affording very natural sub-divisions; and if any should think that its use for distinguishing genera is inconsistent with the botanical rule that such distinctions must be drawn from the parts of fructification, let him recollect that the whole frond is a secondary growth, devoted to the reproductive function, in which vascular tissue, which had no existence in the primary plant, is introduced, and is so intimately connected with the production of the sporangia that it may well be accounted a part of the system of fructification requiring to be

duly noticed. It may deserve consideration whether the figure and surface of the spores may not be employed with advantage. The structure of the sporangium is certainly of high importance, but gives characters for larger divisions than genera. Much importance has been attached by some writers to the mode of growth of the fronds, whether continuous with the caudex or connected with it by a sort of joint, which would divide the whole assemblage into two great sections; but it appears to me that our experience of this character, in respect to higher plants, is greatly against attaching much value to it, and I cannot think its effect good in respect to natural affinities. I would therefore wholly reject it. In the order of their value, I would rank first characters derived from the sporangia; then those from the sori and indusium, which, with the texture of the frond and general mode of growth, will abundantly determine the alliances, orders and tribes. Minuter particulars respecting the indusium, venation and position of the sorus on the vein, with any other good observations on structure, will duly limit the genera.

It is probable that the best determination of the tribes of ferns is that of Presl, though he was doubtless in error in making Hymenophyllaceæ a separate order (just as Lindley was in giving the same distinction to Daneaceæ), and a few modifications of his tribes may perhaps be desirable, but he seems to have failed in appreciating the higher divisions, and his nomenclature is very objectionable in form, and demands correction. I cannot but wonder that in adopting Presl's arrangement (with a great improvement in respect to higher divisions), in his excellent introduction to Cryptogamic Botany, Mr. Berkeley did not see the necessity for altering the terminations of the names. Lindley's principle of making the names of the larger groups, called by him alliances, and, though not generally received by botanists, very generally natural and of great assistance to students, terminate in *ales*, those of the families called natural orders in *aceæ*, and those of tribes and subtribes in any other convenient form of Latin derivative adjectives, is so manifestly useful and reasonable that it may justly excite surprise that it is not universally adopted, and to extend the law of priority to the terminations of such names is altogether preposterous. Neither Presl nor Berkeley meant to maintain that the tribes of ferns are of value equal to natural orders in other parts of the system; and even if they cannot see the merit of Lindley's plan, it is exceedingly injudicious to set it at defiance, and seemingly attempt to cause confu-

sion by such a violation of it. If the tribes are good, let their names terminate, we will say, in *inæ*, and let the real orders or great families, when determined, bear names in *aceæ*. In Berkeley's book we find the proper distinction laid down between the group containing Liverworts and Mosses, and I am persuaded he is right in adding Charales, which had been placed much lower, and that which contains Horsetails, true ferns, and Lycopodials, fully justifying Endlicher's distinction, adopted by Gray, but not noticed by Berkeley, of Anophytes or Anogens from Acrogens. Here also, in treating of the true ferns, the leading groups, which I regard as true natural orders, founded on the condition of the ring of the sporangium, are fully recognised, whilst the tribes are, as we have seen, derived from Presl's work.

Before further explaining my views of the arrangement and mutual relations of ferns, it seems proper to give a very concise, but, I hope, intelligible account of that grand discovery, which has altogether altered our conception of the nature of ferns, exhibiting them to us as not being, properly speaking, the real plants, but a secondary growth from the fertilized germ cell, by means of which the effect of the reproductive process is marvellously multiplied, and the original plant in which that process is perfected is very early superseded by a more highly developed form, in which gemmation produces countless sporangia, with their spores prepared for growth.

It was long a great botanical puzzle to find anything in ferns representing the stamens in higher plants. It was seen that the sporangia represented capsules, and contained *spores*, a name technically given to bodies capable of growth into a new plant like the parent, yet not, like the seeds of higher plants, enclosing an embryo. These spores obviously resembled those of mosses, which, since Hedwig's time, are known to be the product of fertilization by organs analogous with stamens. Where, then, were the staminodia of ferns? They were searched for diligently, but in vain, and ingenuity seemed exhausted. It was seen that the growing spore expanded itself into a cellular disk, mistaken by some for a sort of cotyledon, from some point in which the plant grew. At length the microscope was applied to the minute examination of this disk, and on its under surface were found specialised cells, some of them bearing abundance of phytozooids or active sperm cells; others again being archegonia, single germ cells, so placed at the base of tubular passages built of cells, as to be accessible to the phytozooids, some of which were even seen to enter the tube, so as to come in contact with

the germ cell. This latter, thus acted upon, commenced growth, assuming the true fern form, its fronds producing in the proper place, according to their kinds, innumerable sporangia, bearing spores by which the same succession of phenomena would be repeated. It seems to follow that the cellular disk, small and unimportant as it appears, is the perfect plant in its most active condition, and that what we know as the ferns constitute a secondary growth, specially devoted to extending the reproductive power by its production of spores; one fertilized archegonium, instead of itself becoming a spore, putting forth a plant producing spores not only in vast numbers but through successive years. Here we see fully displayed the difference, already referred to, between Anogens (Charals, Hepaticals and Muscals) and Acrogens (Equisetals, Lycopadials and Filicals). In the former the staminodia and archegonia are produced, together or separately, at certain points on the growing plant, and the fertilized archegonium developes a sporangium bearing numerous spores, the prothallus being transient, and the process in perennial species being renewed from year to year: in the latter the staminodia and archegonia occur only in the tissue first developed from the growing spore, called the prothallus; and the product of fertilization is not a sporangium, but a plant bearing numerous sporangia with their spores as long as the plant subsists. It seems plain enough that this distinction is of such importance as to be properly regarded as the sign of a class; and thus, giving that rank to Thallogens also, we have three classes of the flowerless plants, Cryptogamia of Linnæus, Acotyledones of Jussieu. The classes named, though well distinguished each from the others, and all of them of great extent, offering important variations within themselves, are so strongly bound together as spore-bearing plants, and as being destitute of vascular tissue, except in the case of the secondary growth in Acrogenæ, where that tissue is of a special kind, differing in its nature and arrangement from that of higher plants, that any system not plainly recognising this connection of the three classes, as well as their differences, must be pronounced unnatural. Jussieu's three great divisions—Acotyledoneæ, Monocotyledoneæ and Dicotyledoneæ—though, of course, as any knowledge of nature would lead us to anticipate, there are transition forms near the boundaries, are real natural divisions, confirmed by a variety of important characters; and his names, both in right of priority and as being derived from the principal character, ought to be preserved; but these divisions cannot be compared with *classes* in the Animal kingdom. They represent the sub-

kingdoms or branches; and to obtain a truly natural classification of plants, we must determine within each well marked assemblages, corresponding with the position of classes, under which will stand the alliances and orders or great families, so as to embrace the whole kingdom. At present we will confine our attention to the sub-kingdom, Acotyledoneæ, and to its highest class, Acrogenæ, of which we have noted the common characters. It manifestly contains three of those divisions which Lindley denominates *alliances*, and as custom in Botany has otherwise appropriated the term *order*, we can perhaps do no better than to adopt his name. Here, then, beginning with the lowest structure, we have,

1st. *Equisetales*, with sporangia dependent from the peltate scales of little strobili: spores surrounded by a membrane splitting spirally into two bands. Stems branched, articulated, with fimbriated sheaths at the joints, and the branches whorled around them. One order. Equisetaceæ.

2nd. *Lycopodiales*. Sporangia exannulate not dependent.

Orders:

1. Marsileaceæ: sporangia radical multilocular.
2. Lycopodiaceæ: sporangia axillary, bi or tri-valvate.
3. Ophioglossaceæ: sporangia bivalvate connate on the edge of the contracted fertile frond. Aestivation straight.

3rd. *Filicales*. Sporangia more or less annulate, aestivation circinate.

Orders:

1. Osmundaceæ: sporangia with the ring obsolete or imperfect.

   Tribes:

   1. Marattiinæ: ring obsolete, sporangia more or less confluent.
   2. Schizaeinæ: ring terminal.
   3. Osmundinæ: ring imperfect.

2. Cyatheaceæ: Sporangia with the ring oblique or eccentric.

   Tribes:

   1. Gleicheneinæ: sporangia sessile or nearly so, bursting longitudinally.
   2. Hymenophyllinæ: fronds cellulari-reticulate.
   3. Cyatheinæ: sporangia pedicellate, bursting laterally.

3. Polypodiaceæ: Sporangia with the ring vertical and complete.

* Sori naked.

† Sori indefinite on certain parts of the frond.

Tribes:

1. Taenitidinæ.
   Sori intra-marginal, linear, extending to the interstices.
2. Haemionitidinæ.
   Sori on the veins.
3. Acrostichinæ.
   Sori over the surface or some portion of it.

† † Sori definite.

Tribes:

1. Vittariinæ.
   Sori in a marginal groove.
2. Grammitidinæ.
   Sori elongated, scattered.
3. Polypodiinæ.
   Sori round, scattered.

* * Sori indusiate.

° Indusium underneath the sorus.
Hypindusiatæ.

Tribes:

1. Davalliinæ.
   Sori marginal, indusium cup-shaped or bivalvate.
2. Dicksoniinæ.
   Sori submarginal or scattered, terminating a vein; indusium lateral bivalvate.
3. Peraneminæ.
   Sori round, scattered; indusium lobed or fringed.

°° Indusium covering the sorus with lateral or central attachment.
Epindusiatæ.

Tribes:

1. Adiantinæ.
   Sori marginal.
2. Aspleniinæ.
   Sori scattered, elongated.
3. Aspidiinæ.
   Sori scattered round.

I have not noticed, in this arrangement, a group called Parkeriaceæ, and usually enumerated in what I have called the order Osmundaceæ. My reason is, that this very small tribe seems to me to be founded on unsatisfactory data. There are but two genera. In one of these (Ceratopteris) the annulus is so nearly complete, being also vertical, that there is little pretence for placing it among the Osmundaceæ. In Parkeria the annulus apparently occupies a very small space on the sporangium, but as far as it goes it has the jointed appearance very perfectly, and in Bauer's figure it is a little more extended, and shows more trace of a band round the sporangium than in Hooker's own figure. The aquatic habit and the very curious spores common to both, forbid any separation of Parkeria from Ceratopteris. I conclude, therefore, that though exhibiting transition characters, such as occur everywhere in nature, they ought to stand among the completely annulate ferns, and, on account of the indefinite naked sori on the veins, should be placed in Hemionitidinæ. This is the only tribe which I have thought it necessary to add to those already characterised, but it seems to me well distinguished, and required to complete a system of analogies among the tribes which is very pleasing and interesting. It was indeed noticed as a sub-tribe by Presl.

The numerous proposed genera of Polypodiinae, most of which are entirely abandoned by Sir W. J. Hooker, present great difficulties. I have myself no doubt of the propriety of admitting as characters the more definite distinctions of venation, and indeed where there is any distinct natural group, we should gladly seize upon any tolerable technical character to set it apart under a distinct name, but some of the proposed genera rest on so slight a foundation that they cannot be sustained. A careful revision of this part of the subject by some writer possessing extensive materials and cautious judgment, not so much afraid of transitional forms or so strict in his adherence to the great old established genera often equivalent with tribes as now understood, as Hooker, yet prepared to exercise a rigid scrutiny into the merits of proposed

genera by the application to them of sound and well considered principles is greatly to be desired. Of the few forms which Hooker has admitted as sub-genera or sections, there is one which he himself condemns as wholly without sufficient distinctions, receiving it as he states on the authority of eminent men who regarded it even as a good genus. I refer to Phegopteris Presl, for adopting which I cannot see any reasonable pretence. Yet Prof. Eaton, in Gray's Manual, last edition, not only acknowledges it as a genus but even places it close to Aspidiinae at some distance from Polypodium. This change I must strongly condemn, at least until I am informed of some reason for it, which has hitherto escaped my attention. There was something plausible in the idea that Struthiopteris and Onoclea represented a special mode of forming the fertile frond, one in Polypodiinae, the other in Aspidiinae, but as Hooker declares that he has seen the indusium of Struthiopteris, the two must now stand next to one another, separated only by the venation. Their reunion in one genus in the face of so great a difference in the fronds seems hardly admissable, though consistent with Hooker's course in other cases. But to what tribe do they really belong? Mettenius, the first observer of the indusium of Onoclea, describes it as proceeding from underneath the sorus and forming a sort of broken cup, in strict conformity with which is Hooker's figure in the 'Genera' from his own observations. This being so, Onoclea cannot belong to Aspidiinae, as the position given it by Hooker would seem to imply, and which is the common opinion. Still less does it approach Aspleniinae, where Presl places it. It seems certainly to belong to the Hypindusiate section of Polypodiaceae, and apparently to be nearest to Peraneminae, as the cup-like indusium is ragged and somewhat split in the margin. It may be doubted whether Cystopteris belongs to Aspidiinae, though I do not see where to place it better. The name may be called in question. Bernhardi's genus had remained in neglect until it was adopted by Sir J. E. Smith, who thought fit to correct what he regarded as a bad kind of name, by an alteration which retains the author's idea but gives it a better form. Had this improved name (Cystea) been accepted it would have been better, and at that time the change might easily have been effected, but Sir J. E. Smith's death followed closely on the publication of his fourth volume containing the ferns. Succeeding botanists have not supported him, and we have since been flooded with so many names of the same kind quite

equally objectionable, that it is no longer practically useful to struggle against them. Only let it be recollected that Phegopteris, Dryopteris, Thelypteris, Oreopteris, were formed in the early times, and when Pteris was not a genus but an old general name for a fern, and they have all been received only as specific names. The objection therefore did not apply to them, and compounds of received generic names being justly condemned, Sir Jas. E. Smith was right in his objection to Cystopteris, and in his position had good authority for changing it. The correction has failed through the wrong judgment of others, but the law of priority has no application in such a case, and respect is due to the learning and taste of the great botanist, who would in time have checked an evil practice.

I shall conclude this paper with a note in respect to the proper naming of our Canadian Aspidiinæ, which is called for by the differences of opinion and practice amongst our best botanists. Without presuming to condemn the course pursued by others, I may venture to explain and defend that which, not without careful consideration, I have myself followed. Dr. A. Gray, in a former edition of his valuable Flora of the Middle and Northern United States, which is employed by so many of our Canadian botanists, divided our Aspidiine ferns between Dryopteris (Bory) and Polystichum, employing this last name in the limited sense now generally given to it, for Aspidiinæ with a centrally attached indusium and free forked venation. Lastrea has been generally adopted in preference to Dryopteris, otherwise this method seems to me the right one; but the learned author, in his later editions, has recombined these genera with Aspidium. In a recent number of the *Canadian Naturalist*, a much esteemed friend, who is learned in the literature of ferns, as well as an enthusiast in their study in their native haunts, and an excellent judge of their minutest variations, attempts to restore Polystichum in Roth's sense, which would include all our Aspidiinæ, except Cystopteris and Onoclea, if indeed this genus belongs to Aspidiinae. He thinks Roth's name has the right of priority, the date of the Flora Germanica being the year previous to the part of *Schrader's Journal* containing Swartz's paper establishing the genus Aspidium. It is generally thought, though these eminent botanists worked independently, and might each justly claim originality, that Swartz's paper was communicated before the

publication of Roth's Flora.* At all events, Swartz's name has thus far almost universally prevailed; and the genus, as defined by him, needing sub-division, Polystichum has been adopted for a well marked portion of it, an arrangement which it would be very inconvenient now to disturb. Sir W. J. Hooker, refusing to accept venation as a generic character, limits Aspidium to species with a centrally attached indusium, and adopts Nephrodium for those with a kidney-shaped indusium attached at a point in the margin; but he gives Polystichum as a sub-genus or section of Aspidium, in the sense already explained as including free fork-veined species with a centrally attached indusium, and he employs Lastrea in like manner as a sub-genus of Nephrodium. I have already said that I cannot admit the objection to the use of venation as a generic character in ferns, and I think the distinguished author of the "Species Filicum" would have done better had he raised his sub-genera to the rank of genera. His method, however, practically marks the distinction and employs the names. I cannot think that any number of botanists will sanction the restoration of Polystichum in its original sense, as taking the place in a great degree of Swartz's Aspidium, since the other genera, as proposed by Roth at the same time, to complete his view of this group of ferns, hardly can be received; and if we admitted Polystichum as entitled to supersede Aspidium, our first business, in the present state of our knowledge, would be to sub-divide it into better limited genera, at the risk of causing inextricable confusion. In its more limited sense, Polystichum is needed, and our Flora affords fine examples of it. I would strongly recommend the adoption of the name Lastrea for the free-veined Aspidiinæ with a kidney-shaped indusium attached by a lateral point, and Polystichum for free-veined Aspidiinæ with a peltate or centrally attached indusium, believing this plan to be justified on scientific principles, and practically the most intelligible and convenient.

* I am aware of no ground whatever for the assertion made, I think too hastily, in the paper referred to in the *Canadian Naturalist*, that "Swartz copied Roth throughout, borrowed his genus, calling it Aspidium," &c. Swartz's Aspidium is not coextensive with Roth's Polystichum, and so far as I can trace the evidence, his paper was written without knowledge of Roth's work.

CANADA IN THE BODLEIAN.

BY HENRY SCADDING, D.D.,

HONORARY LIBRARIAN OF THE CANADIAN INSTITUTE.

Having a prolonged access to the famous Bodleian Library at Oxford, a short time since, I decided, while in the enjoyment of the much-valued privilege, to obtain a view of as many volumes as possible of early travels likely to contain references to Canada, and, in particular, to the neighborhood of the present site of Toronto. I found several works that I had never seen before, containing matter of the kind desired; and I made a number of excerpts from them. I did the same afterwards in the magnificent library of the British Museum. Whilst pursuing my researches in the Bodleian, I lighted on a folio volume of Academic exercises of the year 1761, principally in the Latin and Greek languages, productions of members of the University of Oxford, on the occasion of the death of George the Second, and the accession of George the Third. The title of the book in full was "Pietas Universitatis Oxoniensis in Obitum Serenissmi Regis Georgii II, et Gratulatio in Augustissmi Georgii III, inaugurationem. Oxonii, è Typographeo Clarendoneano. MDCCLXI."

By a superscription of this nature, the cry of the old heralds on the demise of the Crown was of course instantly suggested—"Le roi est mort! Vive le roi!"—and one expected to find in such a record the griefs, real and simulated, for the royal luminary just departed, plentifully mixed with prudential salutations to the young sun in the act of rising above the horizon. It was apparent at a glance that such an expectation was well-founded; and naturally the interest in a collection of pieces of the character indicated would have been limited, had not another circumstance happened to excite curiosity. On turning over the leaves, the eye was caught by words that looked strange in the midst of Latin and Greek texts, however familiar in a plain English guise. I saw "Canada" recurring again and again, and "America," and other names to be read on maps of this western hemisphere, but inconceivable as appertaining in any way to the dead tongues of Greece and Rome. The explanation was this: the conquest of Canada had taken place just before the decease of George the Second. The academic versifiers of 1761, therefore, made a point of celebrating that

event and turning it to great account in their panegyrics of the reign just closed, introducing allusions to the same also in their loyal aspirations for the glory and fame of the new King.

While the volume was at hand, I rapidly made selections of passages containing the names that had arrested my attention, as a visitant from Canada, with one or two other passages possessing some interest of a cognate character. These memoranda, though absolutely of little value, I am desirous nevertheless of depositing, where, at all events, they may be consulted, should the exigencies of a Canadian student hereafter require authority for a Latinised or Grecised form of an American local proper name. I do not suppose that the old "learned" tongues are going wholly to die out amongst us. Such a result will be prevented by the select few who, it is not to be doubted, will, in a certain average, here as elsewhere, always emerge from the general community, possessed of a special aptitude for the mastery of languages. For the sake of those, comparatively few though they may be, who shall evince especial talent for linguistics, ancient and modern, our Canadian schools and colleges and universities will never cease to maintain a supply of instructors and guides. Nor, on the score of essential knowledge, in respect to the composition of modern English speech, and in respect to the nomenclature adopted in every department of science, would it be safe wholly to omit means and appliances for acquiring familiarity with what used prœminently to be called the learned languages. We conceive too that the literature appertaining to those tongues ought not to be left out of any plan of general education, for the further reasons, as well set forth lately by the accomplished Inspector of Schools for the Province of Ontario, in his annual Report (p. 12), that "it gives enlarged views, helps to lift the mind above a hard materialism, and to excite interest and sympathy in the experiences of human life."

Our extracts may also serve to add a touch or two to the general picture of the times of George the Second. An interest in regard to the era of that King has of late been revived in the public mind—a period of English history that had become misty in the retrospect of the generality. One of Thackeray's lectures on the "Four Georges" brought back George the Second and his surroundings to the popular imagination for a passing moment. The republication a few years back by Hotten, of Wright's "Caricature History of the Georges," contributed to the same result—a work containing "Annals of the House of Hanover, compiled from the squibs, broadsides, window-

pictures, lampoons and pictorial caricatures of the time," and accompanied by nearly four hundred illustrations on steel and wood. Since then a series of papers entitled "Historical Sketches of the Reign of George the Second," in successive numbers of Blackwood, has reawakened the curiosity of the reading public on the same subject. Of the sketches in Blackwood, Mrs. Oliphant is the writer. They are now published in collected form, and have been reprinted in the United States. In Mrs. Oliphant's volume, significantly enough, no chapter is devoted to the King himself, but one is given to the Queen, as being, in point of sense, the better man; George's good genius, while she lived, saving him and probably the nation from serious calamity. Sir Robert Walpole is sketched as "The Minister" of the era. Sir Robert has also lately been evoked from the shades for the contemplation of the modern public by Lord Lytton, in his rhymed comedy of "Walpole, or Every Man has his Price." Next we have Chesterfield, portrayed as "The Man of the World" of the period; with pictures of Pope as "The Poet;" of John Wesley as "The Reformer;" of Commodore Anson as "The Sailor;" of Richardson as "The Novelist;" of Hume as "The Sceptic;" of Hogarth as "The Painter." Chapters are devoted likewise to the Young Chevalier and Lady Mary Wortley Montagu. In depicting this remarkable group, no special occasion presented itself for delineating the denizens of the colleges and halls of the universities, engaged at their literary work. The notes here offered will give a momentary glimpse of them thus employed. It is in another relation that they are referred to in the sketch of Wesley, "The Reformer." Wolfe's career, in which we in Canada naturally feel a peculiar interest, was brilliant but very brief; otherwise we might have expected a chapter to have been assigned to him as "The Soldier" of the day. He also, or at least his name and fame, will come repeatedly before us in the course of our Oxford extracts. Of the whole era to which our attention is thus directed, it has been said, by a writer on the same subject in a late number of the *Quarterly Review*, that it was "a time of order without loyalty; of piety without faith; of poetry without rapture; of philosophy without science. In one word, it was an age without enthusiasm." But then, as the same writer adds, "the absence of enthusiasm is not necessarily fatal to the existence of a high sense of duty; a quiet, unobtrusive, religious spirit; an honest, if not a very profound, inquiry into the problems of human life, and the sources of human knowledge: while it is eminently favorable to that polished,

if cynical, literature which, while it makes emotion unpardonable, at least makes cant impossible." There was some enthusiasm, however, as we shall see; but it was of a barbaric, piratical cast; an enthusiasm, too, fortunate enough under the circumstances; for, it being too late to give heed to Polonius's wise rule, "Beware of entrance to a quarrel," the only thing left to be done was to adopt the residue of his precept—

"—— but being in,
Bear 't, that the opposed may beware of thee."

From her connection with Hanover through the Georges, England was much mixed up with the internal disputes of Europe; and so was brought, all the more frequently, into direct collision with her ancient Gallic foe. The national enthusiasm of the era accordingly took the form of hostility to France, and an idolatry of the statesmen who could best devise plans by means of which the commerce and power of France might be destroyed. In church and state, this spirit was rampant, conventionally if not really. In the seats of learning it was carefully cherished in the youth of the land; and not the least carefully, as our extracts are about to show, by the masters of colleges, by the professors and tutors—

"—— in the Attic bowers,
Where Oxford lifts to heaven her hundred towers."

It was not, however, while casually examining the volume in the Bodleian that I for the first time had experienced some surprise at suddenly seeing the new amidst the old—Canada and America mixed up with Latium and Hellas. Some years ago I happened to become the possessor of an old copy of the *Periegesis* of Dionysius. This is a Geography in Greek hexameters, quite Homeric in style, and very pleasant to read. Its author Dionysius was a Greek of Alexandria, and was employed, Pliny says, by one of the emperors, without specifying distinctly which, to make a survey of the Eastern parts of the world. He is supposed to have lived about the year A.D. 140. For the sake of distinguishing him from other notable persons bearing the same name, he is known from the title of his book *Periegesis*, as *Dionysius Periegetes*, *i. e.* the Cicerone, *Valet de place*, or Guide to remarkable localities.

On turning over the leaves of my old copy of the *Periegesis*, for the first time, I was startled at observing a sub-division of the poem headed in good Greek, Περὶ τῆς Ἀμερικῆς ἢ τῆς ἐπὶ δύσιν Ινδικῆς γῆς., *i. e.*, "Concerning America or the West Indies;" and a few lines down

appeared the familiar name of our own Dominion, expressed in Greek characters, and helping to form a foot in a Homeric hexameter of excellent rhythm. On closer inspection I discovered that Dionysius had found an Oxford continuator in the person of a writer on Geography rather eminent in his day, Edward Wells, who, intending his edition of the *Periegesis* to be of practical use in the work of education, and to be committed to memory like the rules for the gender of nouns and the conjugation of verbs in the common grammars of the day, not only corrected the matter of Dionysius Periegetes, but also added to his poem some hundreds of lines, likewise in excellent Homeric Greek, descriptive of the portions of the earth disclosed to the knowledge of men since the days of Columbus. I transcribe as a specimen some of the lines which refer to America. It will be seen that Canada, Quebec, Hudson's Bay, Boston, New York and several other familiar cisatlantic names, wear a singular aspect in the guise in which they here appear. We are to observe that when our pseudo-Dionysius wrote, Canada was still a French possession, and the territories down to Florida were English.

Ἀμερικὴν ἰσθμὸς διατέμνεται ἄνδιχα γαίην
Στεινὸς, καὶ νοτίου πόντου μέσος ἠδὲ βορείου,
Ὃν ῥά τε τὸν Δαριηνὸν ἐπωνυμίην ἐνέπουσι
Τοῦ δ' ὕπερ, Ἀμερικὴ τετανυσμένη ἐστὶ βορείη,
Νέρθε δὲ τοῦ, νοτίη· ἐρέω ταπρῶτα βορείην.
Ἀμφ' ἀκτὰς βορεήτιδας, Ὑδσονίῳ ἐπὶ κόλπῳ,
Ἔνθα νέη τέταται Καμβρὶς, νέη ἔνθα Βρετανίς.
Ἐξείης Φραγκῶν πεδίον νέον ἐκτετάνυσται,
Ἀμφὶς εὐῤῥείταο Κανάδου αἰπὺ ῥέεθρον·
Οὔνεκά μιν θ' ἑτέρως γάιην καλέουσι Κανάδην·
Ἐνθάδ' ὑπὲρ ποταμὸν Κηβεκκίδος ἐστὶ πτόλεθρον.
Κεῖθεν ὑπὲρ ῥηγμῖνα βορειάδος ἀμφιτρίτης,
Ἀγγλῶν μακρὰ νότονδε νέμονται ἔκγονοι ἀνδρῶν·
Οἱ μὲν ναιετάουσι νέης λιπαρὸν πέδον Ἄγγλης,
Ἐνθάδ' ὑπειράλιον Βοστωνίδος ἐστὶ πτόλεθρον·
Οἱ δέ τε χῶρον, ἰδὲ πτόλιν Ἡβοράκοιο νέοιο·
Οἱ δὲ νέης πέδον ἀμφότερον ναίουσι Ἱέρσης·
Οἱ δέ τε του Πέννου γαίην παρος ὑλήεσσαν,
Ἐνθάδ' ἐϋκτίμενον Φιλαδελφίας πτολίεθρον.
Οἱ δ' αὖθις πεδίον καὶ ἐπώνυμον ἄστυ Μαρίας.
Οἱ δέ τε παρθενικῆς τὸδ' ἐπώνυμον οὔδας ἀνάσσης,
Ἐνθάδ' ἐπωνυμίην Ἰακώβου ἐστὶ πτόλεθρον·
Οἱ δέ τ' ἐπίκλησιν Καρόλου πέδον ἠδὲ πτόλεθρον,
Ἀγγλιακῶν ὑπὲρ ἠπείροιο πανύστατοι ἀνδρῶν.
Ἐξείης γαίη παραπέπταται ἀνθεμόεσσα
Ἐς νότον, ἦχί περ ἀγχίαλος δόμος Αὐγουστίνου.

1004—1029.

That is to say: "The land of America an isthmus, narrow, and midway betwcen a southern and a northern sea, cuts in two: it, moreover, men surname the Darien: above it expands the Northern America; below it, the Southern. I shall speak first of the Northern. On the boreal coasts that line the Hudsonian Gulf on the one hand, extends a new Wales; on the other, a New Britain. Then next expands the Franks' new domain, on both sides the fair flowing Canada's deep stream, whence men call it, in other words, the land of Canada. There on the river is the city of Quebec. Thence southward far, along the boreal Amphitrite's shore, are distributed the descendants of English men. Some of them inhabit the fertile soil of a new England; there on the shore of the sea is the city of Boston; some of them, the country and city of York the new; some of them, the twofold region of a new Jersey; some of them, the once sylvan land of Penn—there is the well-built city of Philadelphia. Others of them again inhabit the soil and city named from Mary; and others, the area named from a virgin queen. There is the city surnamed of James; and others, the soil and city named from Charles, the most remote on the continent, of English men. Next is spread out to the south the land of Flowers, where upon the seaboard is Augustine's dwelling."

It will be noticed above, in the eleventh line, that the name "Canada" is applied to the river St. Lawrence; and the statement is made that "the surrounding country takes its name from the river." An occasion will arise in the course of the present paper to make some observations on this and some other points in the extract. The usage of designating the St. Lawrence as the great river of Canada, was for a time in vogue among early writers. Again: at line 1303, we have an enumeration of the islands appertaining to the American continent. The lines relating to Newfoundland are given, the name of the "fair-flowing" *Canada* occurring therein, again as designating the St. Lawrence,

Νῦν δ' Ἀτλαντιακοῦ εὐρὺν ῥόον ὠκεανοῖο
Μακρὰ σὺ νηὶ ταμὼν ἐς Ἀμερρίδα γαῖαν ἵκοιο·
Ἐνθάδ' ἐπὶ προχοῇσιν ἐϋῤῥείταο Κανάδου,
Νῆσον ἀπειρεσίην νέον εὑρόντ' ἔκγονοι ἀνδρῶν
Εὐρωπηείων, πέδον ἰχθήεσσιν ἐραννόν·
Ὠρύεται γὰρ τ' ἀμφὶ μαλ' ἰχθυόεσσα θάλασσα.
1303—1308.

That is: "Now speeding in thy bark afar, across the wide stream of the Atlantic ocean, come to the American land. There at the vast outlet

of the fair-flowing stream Canada, the offspring of European men have newly found an island of untold extent, a soil beloved of fishers, for round it roars a sea especially abounding in fish."

In the edition from which I have made the above extracts, the whole of the *Periegesis*, the continuation included, is accompanied by notes in Latin, and also by a line-for-line Latin version, after the manner of Clarke's Homer, in former days. As in the case of the work just named, the Latin verbatim rendering, especially of compound terms, and stock epithets, is amusing. But with this the reader need not be troubled. Simply as a specimen which will recall the grotesque kind of help that a few years back was considered necessary for students in their acquisition of Greek, I transcribe four lines, in which the familiar word *Canada* quaintly occurs:

> Deinceps Francia nova extenditur,
> Utrinque ad pulchriflui Canadæ altum fluentum:
> Quapropter ipsam etiam terram aliter vocant Canadam,
> Ubi super fluvium Quebeciæ est oppidum. 1011–1014.

The humorous parody of this kind of elucidation of a Greek text, in one of Bishop Heber's youthful pieces, still preserved in his collected works, will probably be remembered, in which he speaks of

> —κλεινήν Λυκίην ἢ Βίλστονα ἢ Βρεμίχαμον,
> Χαλκόπολιν, φίλον οἶκον ἀγάνορος Ἡφάιστοιο.
> 512–516.

accompanying the same with a version in the usual harsh, corduroy kind of Latin:

> — nobilem Lyciam, ant Bilstonem, ant Bremichamum
> Æris-civitatem, charam domum ob-virtutem-mirabilis Vulcani.

and illustrating all by elaborate Latin notes, after the manner of Brunck, Hermann and Dawes; showing, for example, that here it was impossible the Asiatic Lycia could have been meant as some critics insanely contended; but that *Wolverhampton*, "civitas a *lupis* nomen habeus," was the place, inasmuch as the author is speaking of English towns, or Bilston, and Bremicham (Birmingham), the latter a city, as the supposed obscure Greek poet speaks, "devoted to the manufacture of brass, and the home beloved of the very manly Hephæstus."

We now proceed to give our excerpts from the volume in the Bodleian. The pieces contained in that folio are not, as will be seen, the crude exercises of junior fledglings in the university. The occasion

was so grave and dignified that it was deemed worthy to call forth the literary powers of the seniors, of professors and fellows and heads of colleges. Nevertheless, all the exercises have about them more or less of the school-boy ring, and in some of them possibly may be detected a tone not uninspired by a view of the substantial bounties at the disposal of the personages addressed or referred to.

Our first specimen will be from a copy of Ovidian hexameters and pentameters, by the Vice-Chancellor himself, Dr. Joseph Brown. The selection was made for the sake of the allusion to the recent conquests in North America, and the rather bold assignation to our St. Lawrence of the style and title of an Indus: "Each Indus," the Vice-Chancellor says, "is now subject to the power of Britain." The other must be the Indus proper, or else poetically the Ganges; and the allusion is to the virtual conquest of all India by the victories of Clive. Under this impression the extract was made. The sense may be different, as is noted below. The young King is thus apostrophised:

O Princeps Auguste! vide quæ pondera Famæ
Sustineas, et quæ poscat avitus honor.
Aspice quæsitos alio sub sole triumphos;
Accessit regnis Indus uterque tuis.
* * * * * *
Conciliare animos, populo imperitare volenti,
Illa sit ambitio, palma sit illa Tibi.
Hæc tua bella geras, certos habitura triumphos,
Civilis rixæ Victor et invidiæ.
Seditio procul absit, et illætabile murmur,
Atque omnes æquo fœdere jungat amor:
Tene magis salvum populus velit, an populum Tu—
Sola sit hæc nullo lis dirimenda die.

"O august Prince! see what a burden of glory thou sustainest, and what demands the honours gained by thy grandsire entail! Behold under another sky triumphs won! Each Indus now is added to thy realms. To conciliate hearts, to rule a willing people—let this be thy ambition, this thy prize! Victorious over civil strife and envy, let such be thy wars, destined to a sure triumph. Avaunt sedition and joyless complaint! let love unite all in one just league! Let this be the sole question—never to be decided—whether thy people most wish thee well, or thou thy people!"

In the composition of Dr. Musgrave, Provost of Oriel, who also chose the elegiac couplet, we have Canada and the St. Lawrence intro-

duced. These names occur in an address to the shade of the deceased King, George the Second, thus:

Te penes arbitrium pelagi; Tibi, sospite classe,
Neptunus gemini contulit orbis opes.
Te Canadæ tremuêre lacus, Laurentius ipse,
Auspice Te, placidas volvit amicus aquas;
Quique tenent Nigrim Mauri, quique ultima Gangis
Littora flava, tuo colla dedêre jugo.

"With thee was the control of the sea: on thee, thy fleet kept safe, Neptune conferred the wealth of two hemispheres. Before thee the lakes of Canada trembled: under thy auspices the St. Lawrence itself, now a friendly stream, rolled down its waves appeased. The swart Moors, as well those who possess the Niger, as those who possess the scorched shores of the far Ganges, yielded their necks to thy yoke."

The allusion to "Niger" is to the capture, a year or two previously, of the forts St. Louis and Goree, on or near the river Senegal.

The Rector of Exeter College, Dr. F. Webber, contributed some Alcaic stanzas. There is in the extract here given no reference to local names on this side the ocean. But we have in it a clever working out of the setting-and-rising-sun metaphor. He speaks of the recent royal death, and the recent royal accession, in these terms:

Inter triumphos Georgius occidit!
Nec clarior sol oceano subit,
Cum flammeo splendore præbet
Indicium reditûs sereni.

At, uno adempto Lumine patriæ,
En surgit alter Georgius, altera
Lux! et sui Regis renidet
Auspiciis recreata Tellus.

"Amidst his triumphs fell our George! And never more brilliantly set sun in ocean, when with fiery glow it gives promise of fair return. But lo! no sooner is one luminary of the father-land taken away, than another springs up—another George: and reanimated by the omen of its King, the land regains its smile."

The Alcaic stanza was also selected by Dr. Randolph, President of Corpus, for his exercise. He celebrates the conquest of Canada, and names the St. Lawrence. He addresses himself thus to the young King: He shows himself a careful student of Horace and a master of Latin.

Pacatus orbis consiliis tuis
Irrupta gaudet fœdera jungere,
Gentesque Te, Rex, bellicosæ
Compositis venerantur armis.
Dediscit artes perfida Gallia;
Mansuescit Indus, scalpraque projicit,
Laurentiique immite flumen
Volvit aquas taciturniores.
Mercator audax æquora transvolat,
Plenoque cornu copia cernitur,
Frandemque propulsat sceluscque
Rex animo et patriâ Britannus.

"The whole earth, restored to peace by thy counsels, rejoices in forming inviolable leagues; and warlike nations, unitedly laying aside their arms, venerate thee, O King! Treacherous Gaul unlearns her wiles: the Indian ceases to be savage, and throws away his dread knife: St. Lawrence's ruthless stream rolls down his waves less ravingly. The daring trader traverses the ocean, and Plenty with full horn is to be seen. Trickery and guilt are utterly repelled by a King in soul, as by birth, a Briton."

We have, of course, in the closing expression, an allusion to the young King's first speech from the throne, in which, it is said, he inserted with his own hand a paragraph stating that "he gloried in the name of Briton," thus differencing himself from his immediate predecessors, who were German-born. The text of the paragraph referred to is as follows: "Born and educated in this country, I glory in the name of Briton; and the peculiar happiness of my life will ever consist in promoting the welfare of a people whose loyalty and warm affection to me I consider as the greatest and most permanent security of my throne; and I doubt not but their steadiness in those principles will equal the firmness of my invariable resolution to adhere to and strengthen this excellent constitution in church and state, and to maintain the toleration inviolable."

In some vigorous heroic verse, by a fellow of Magdalen, John Hall, "S. T. B.," or Bachelor of Theology, we have an express reference to Wolfe, the plains of Abraham, and the conquest of Canada. The lines included in our extract are an indignant address to France:

En! Tibi in Hesperiis quo cedunt, Gallia, terris
Insidiæ, turpesque doli, cædesque nefandæ!
Divisi impatiens regni, tu cuncta volebas
Imperio premere et dominari sola per orbem.

At sæva instantem non arma avertere cladem,
Non rupes poterant, cum in prælia duceret ultor
Wolfius accensas metuendo Marte catervas!
Ergo expugnatas arces, eversaque castra,
Nequicquam mœres, fractis ingloria telis.
Ergo iterum vastata diu tua rura, Colone,
Pace colas, nec te cultro jam terreat Indus
Crudelis, Gallusque Indo crudelior hostes.
Felix rura colas: hæc Georgius otia fecit.

"Behold, O Gaul! to what end thy plots and base wiles and nefarious blood-thirstiness have come, in the lands of the West. Refusing to endure a divided rule, thou didst aim, by military power, to subdue all things, and to lord it throughout the earth alone! But ruthless armaments availed not, nor rocky fastnesses, to avert from thee quick destruction, when Wolfe, the avenger, brought into the field his cohorts, fired by dread-inspiring Mars. Here is the reason why thou, shorn of glory, thy weapons shattered, bewailest in vain stormed citadels, demolished fortresses! Here is the reason why thou, O colonist, now again tillest in peace thy fields devastated so long: and neither the inhuman Indian affrighteth thee with his knife, nor thy Gallic foe, than Indian more inhuman. All blest, till thou thy fields. For thee, this repose a George hath secured."

The production of John Smith Bugden, gentleman commoner of Trinity ("Coll. SS. Trin. Sup. Ord. Com."), is likewise in heroic metre. He moulds into shapely classic forms the names of Acadia, Louisbourg, Quebec, Ontario and the Mississippi. He represents the French King, Louis XV, on hearing of the decease of George II, as bidding his nobles not to imagine that that event would unfavorably affect the fortunes of England. The reference to our own Lake Ontario is especially interesting. He thus speaks to them:

—— Suetas torpere in prœlia vires
Creditis Angligenûm, minuive ingentia cœpta?
En superest sceptri, superest virtutis avitæ,
Georgius, auspiciis æque felicibus, hæres.
Ille animis veteres odiisque sequacibus iras
Implebit, belloque secundo quicquid agendum
Restiterit, paribus cumulabit protinus armis.
Fœdera nunc violasse pudet, nunc pœnitet ultrò
Acadiæ fines tetigisse, incertaque rura!
Occiduo tulerit quantos ex axe, videtis,
Longævi dudum Regis fortuna, triumphos.

Ipsa jacet Lodoïca solo convulsa, minæque
Murorum ingentes, disjectaque mœnia fumant.
Umbriferis frustra se muniit ardua saxis,
Vallosque implicuit vallis (victoria tanto
Hostibus empta licet Ductore) arx fida Quebeci.
Jamque novæ gentes et centum uberrima regna,
Se Britonum titulis ultro regalibus addunt.
Ex quo præruptis scopulis plaga pinea vastum
Obsidet Osvegum, sonituque per arva marino
Lata fremit, lacuumque Ontaria maxima sævit;
Ad cultas procul usque oras, Missippia præceps
In mare quà refluum sublimi volvitur ore;
Prœlia magnanimi novus ille Georgius ultor
Instaurabit avi, propriumque tuebitur Indum
Victor, et Hesperio latè dominabitur orbi.

"Think ye a torpor is coming over the practised power of the English race for war, or that the vastness of their designs is lessening? Lo! there survives a George, heir under equally happy auspices to his grandsire's sceptre, to his grandsire's valour. He will maintain the full measure of the ancient quarrels with supplies of energy and persistent hate; and whatever for a successful war remains to be done, he will forthwith, with armaments like the former, fully accomplish. It shames me now that I broke the treaty; it repenteth me now that I wantonly meddled with the boundaries of Acadia, and the tracts left undefined! Ye see what triumphs the fortune of the long-lived King hath lately wrested from the western world! Louisbourg is razed to the ground; its vast threatening walls, its shattered fortifications, smoke! In vain did the trusty fortress of Quebec, raised aloft on shadowy rocks, strengthen and environ itself with stockade upon stockade—paid for by the foe though that success was, by the life of a commander so great! And now new tribes, and a hundred fertile domains, voluntarily swell the honours appertaining to the King of the British people. From the point where, on precipitous rocks, a region of pines surrounds the lonely Oswego, and with a sound like that of the sea, heard over a wide space, Ontario, greatest of lakes, roars and rages, even unto the cultured banks afar, where the swift Mississippi, with front upreared, plunges into the tidal sea,—he, this new George, this new avenger, will begin afresh his grandsire's wars, will guard an Indus of his own, and will lord it far and wide within the Hesperian hemisphere."

"Angligenûm," in the second line, is, of course, a contraction for "Angligenorum," from Angligeni, a mediæval word for "men English-

born." Another term of the same era, for "Englishmen," is "Angligenenses," a word familiar by reason of the well known monkish distich,

> Chronica si penses, cum pugnant Oxonienses,
> Post paucos menses, volat ira per Angligenenses,

a couplet quoted not long since in the British House of Commons, in relation to the agitations occasioned throughout the empire by Oxford controversies. It referred originally to faction fights between Northern men and Southern men, between Welshmen and Saxons, which filled the streets and neighbouring fields with tumult and bloodshed. The treaty of which Louis is made to regret the violation, in line 8, is that of Utrecht. By the 12th article of the treaty of Utrecht, "all Nova Scotia, or Acadia, with its ancient limits, and with all its dependencies," was ceded to the Crown of Great Britain. The French authorities afterwards contended that Nova Scotia comprehended only the Peninsula, and did not extend beyond the Isthmus: whereas the charter of James I. to Sir William Alexander, and Sir William's own map, as old as the charter, demonstrated that the ancient limits of the country so named included a vast tract of land, besides the peninsula, reaching along the coast till it joined New England; and extending up the country till it was bounded by the south side of the St. Lawrence. By the 15th article of the treaty of Utrecht, "the subjects of France, inhabitants of Canada and elsewhere, were not to disturb or molest, in any manner whatsoever, the Five Nation Indians, which, the article says, are subject to Great Britain, nor its other American allies." Notwithstanding, a writer in the *Gentleman's Magazine*, for December, 1759, sets forth, "while the French usurpations went on so insolently in Nova Scotia, the plan was carrying on with equal perfidy on the banks of the Ohio; a country, the inhabitants of which, says that writer, had been in alliance with the English above a hundred years ago, to which also we had a claim, as being a conquest of the Five Nations, and from which, therefore, the French were excluded by the 15th article of the treaty of Utrecht." We observe from line 20 that Lake Ontario had by some means acquired a reputation for tempestuousness. In the thirteenth of the Duddon Sonnets, Wordsworth also, at a later period, sang of

> "—— the gusts that lash
> The matted forests of Ontario's shore,
> By wasteful steel unsmitten."

The adroit Latinist has, in line 22, made "Mississippi" manageable, manipulating it into "Missippia." By "Indus," in line 25, the

St. Lawrence is, as we suppose again, intended. It is possible, however, that here, and in the other places as well, where the word occurs in these extracts, "Indus" may be "the Indian," meaning the Indian races.

Our next excerpt is from the exercise of Thomas Baker, "Portionista," as he is styled, of Merton. "Portionista," pensioner, or exhibitioner, has been strangely vernacularized at Merton into "postmaster." The metre is epic or heroic. We again have allusions to the conquests of Cape Breton and Canada; and the St. Lawrence is named. The battle of Minden is celebrated; and the capture of Goree. He compares the successes of George II. over France on the continent of Europe to those of Edward III. He thus speaks:

Vidimus Edvardi veteres revirescere laurus;
Vidimus Angliacæ metuentes signa catervæ
Gallorum trepidare acies Germania priscæ
Conscia virtutis, Britonum mirata triumphos,
Nuper Mindeniæ obstupnit miracula pugnæ.
Addam urbes Lybiæ domitas, captæque Bretonæ
Duplex obsidium; dicam superaddita nostris,
Sub duce pro patriâ egregie moriente, triumphis
Arva, ubi Laurenti in latum se porrigit æquor.

"We have seen renewed the ancient laurels of an Edward. We have seen the Gallic armies tremble through fear of the standards of an English cohort. Germany, mindful of valour evinced of old, full of wonder already at triumphs won by Britons, lately stood amazed at prodigies achieved in the fight at Minden. I will add the reduction of African towns; the twofold blockade in the capture of Cape Breton: I will name the accession to our conquests, under the Chief who for his country so nobly fell, of the fields where the vast surface of the St. Lawrence spreads itself abroad."

This association of Minden with "the fields where the St. Lawrence spreads itself" will remind the reader of a passage in Langhorne's "Country Justice," the last line of which has become a stock quotation. (He is speaking of a poor vagrant culprit, the child of a soldier's widow):

Cold on Canadian hills, on Minden's plain,
Perhaps that parent mourn'd her soldier slain;
Bent o'er her babe, her eyes dissolved in dew,
The big drops mingled with the milk he drew,
Gave the sad presage of his future years,
The child of misery, baptized in tears.

In the lines selected from the hexameters of Henry Jerome de Sales, gentleman commoner of Queen's, we have Niagara named, the St. Lawrence and the Ohio. He utters a lament on the death of the King:

Occidit heu patriæ columen! Te, maxime Princeps,
Plebs, proceresque dolent, quin rusticus ipse per arva
Auspiciis secura tuis et nescia belli,
Sinceros fundens luctus lacrymasque, dolorem
Exprimit, et raptos Britonum deplorat honores.
Heu citò vanescit vitæ decus! heu citò rerum
Transit honos! frustrà mandata Britannica classes
Vidimus invictas subjectum ferre per æquor;
Ingentes animos frustrà miratus arenas
Horribiles inter Mauros, desertaque tesqua
Gallorum invalidas contundere viderat iras.
Heu frustrà sævi positâ feritate tyranni
Extremi ad fines orientis, et arva beata
Auratis in quæ Ganges devolvitur undis,
Ignotas Britonum nomen coluere per oras.
Consiliis frustrà prudentibus usus, et altâ
Omnipotentis ope, victricia fulmina latè
Sparsisti: frustrà partos sine cæde triumphos
Viderat horrisonis torrens Niagara fluentis,
Nequicquam insidias Indorum vidit inanes
Debellata Ohio, atque, æterni causa doloris,
Subjectas tibi volvebat Laurentius undas.

"Alas! the country's stay hath fallen! Thee, great Prince, commons and nobles lament: nay, in the fields, rendered through thy providence secure and undevastated by war, the very boor expresses his grief by unfeigned lamentations and tears, and bemoans the snatching away of the pride of the British people. Alas! how swiftly vanisheth life's grace! how swiftly passeth away the glory of earthly possessions! In vain have we beheld invincible fleets bearing the behests of Britain across the subject main: in vain the Moor, amazed, amidst his horrid sands and desert wilds, beheld mighty spirits quelling the strong rage of the Gauls. Alas! throughout regions unexplored, to the bounds of the far East and the happy fields towards which Ganges rolls, with waters that bring down gold, in vain have barbarian chiefs, laying aside their ferocity, reverenced the British name! In vain, leaning on wise counsels and the help of the Most High, hast thou dealt thy victorious bolts far and wide! In vain, with dread-sounding billows, did the down-rushing Niagara behold bloodless victories won. To no purpose

did vanquished Ohio behold the ambuscades of savages made of none effect; and, source of woe unending! St. Lawrence pour down his tide, subject unto Thee!"

It will be observed that the penultimate syllable of Niagara has, in the above Latin lines, the quantity which it possessed when the name first fell on the ear of Europeans. The line in Goldsmith's *Traveller* will be remembered:

> Have we not seen, at Pleasure's lordly call,
> The smiling, long-frequented village fall?
> Beheld the duteous son, the sire decayed,
> The modest matron, and the blushing maid,
> Forc'd from their homes, a melancholy train,
> To traverse climes beyond the western main,
> Where wild Oswego spreads her swamps around,
> And Niagara stuns with thund'ring sound?

Like other native names, Niagara has been subjected to a process of abbreviation and shaping. It properly begins with a nasal *On*. The following forms of the word are to be read in early books on Canada: Iagera, Iagare, Jagera, Jagare, Jagera, Niagaro, Niagra, Niagro, Oakinagaro, Ochiagara, Ochjagara, Octjagara, Ohniagero, Oneageragh, Oneagoragh, Oneigra, Oneygra, Ongayerae, Oniagara, Oniagorah, Oniagra, Oniagro, Onjagara, Onjagera, Onjagora, Onjagore, Onjagoro, Onjagra, Onnyagaro, Onyagara, Onyagare, Onyagaro, Onyagoro, Onyagars, Onyagra, Onyagro, Onyegra, Yagero, Yangree. In the Jesuit *Relation* for 1641, we have Onguiaahra.

Our English system of accentuation misleads us in respect to the quantity of syllables in native words. The aborigines lay an almost equal stress on every syllable: thus it happens that, although their language, when reduced to writing, seems to consist of words of an unconscionable length, it sounds, when spoken, monosyllabic. Ohio, too, it may be observed, has here its middle syllable short. We find it short in other early productions. Like the shortening of the penult of Niagara, the lengthening of that of Ohio is an English modernism. Ohio occurs in the old books as Oio and Oyo.

For the sake of a clever transfer into Latin of the idea of our national flag, we made an extract from P. Methuen's production. Otherwise, in the lines presented there is nothing especially interesting. Indus therein seems to indicate the river; although again Indian or Hindoo may be intended. The writer was a gentleman commoner of Corpus Christi College. He is speaking of the late royal death:

Ah! quoties memori revocantes pectore, Regem
Sublatum quærent Britones, luctuque recenti
Tam cari capitis quoties jactura recurret,
Dum redit in mentem veri pia cura Parentis,
Sancti juris amor, mitissima gratia sceptri,
Et blandi mores, atque artes mille benigni
Imperii?—At non sola dedit pax aurea laudem;
Nec minus emicuit memorabile nomen in armis,
Per mare, per terras, quacunque sub auspice tanto
Anglia victrices turmas metuenda per orbem
Miserit, extremasque Indi tremefecerit oras,
Sanguineumve Crucis signum (dirum hostibus omen!)
Dant ventis agitare per æquora lata carinæ.

"Ah! recalling him, how oft, with faithful hearts, will Britons sigh for the King of whom they have been bereft: how oft with fresh grief will the loss of so dear a one come back, whilst to their minds recur his true paternal solicitude, his love of the sacred right; the gentle graciousness of his sway, his condescending manner, his countless modes of exercising a benignant rule! Yet not alone did golden peace win him renown: not less did his name shine forth conspicuous for deeds of arms, by sea and land; wherever, under guardianship so august, England, feared throughout the world, hath sent forth her victorious bands, and made tremble the remote shores of the Indus; wherever her ships unfold to the winds on the broad sea, the blood-red cross, to foemen, presage of woe!"

A fellow-commoner of Trinity, John Cussans, contributed some Alcaics; and therein he imagines the shade of George II. in Hades meeting the shades of his son Frederick and of his own Queen Caroline. The substance of their talk, which is about affairs in the upper regions, is briefly given. Whilst they converse, the ghost of Wolfe joins them for a moment. It will be remembered that George III. was not the son, but the grandson of George II.:

Prolis frequentes ut juvat invicem
Audire plausus! Ut, patriæ memor,
Uterque victrices Britannûm
Assiduâ bibit aure laudes!
Nec longum; et altis gressibus Wolfius,
Visâ coronâ, se socium inserit;
Belli tumultus usitatos
Victor adhuc meditatur Heros:
Fractoque postquam milite Galliam
Suetis fugatam cedere finibus

Exaudit, inceptisque culmen
Appositum subito triumphis,
Lætus citato se rapit impetu,
Nec plura quærit: tum sua, conscià
Virtute nixus, gesta crebrò
Dinumerat, patriasque laurus.

"How it delighteth them mutually to hear the frequent commendations of their descendant! Still mindful of fatherland, how each of them drinks in with eager ear the praises of the victorious British race! Nor is the interval long before, observing the concourse, Wolfe, with solemn stride, joins them: the victor-hero even yet thinks over the turmoils of war to which he was used; and when he hears that Gaul, its military power broken, hath been made to flee from its wonted limits and to succumb; and that to the triumph begun by himself a crown was swiftly put, he, filled with joy, hurries away, and asks no more. Then, sure of his own conscious merit, he rapidly reckons up his own exploits and his country's glories."

It will not be altogether out of place to mention here that Cruden dedicated the first edition of his well-known *Concordance* to the Queen Caroline, of George II., and to give a specimen of the style he employs addressing her on the occasion:

"The beauty of your person," he says, "and the fine accomplishments of your mind, were so celebrated in your father's court, that there was no prince in the Empire, who had room for such an alliance, that was not ambitious of gaining a princess of such noble virtues into his family, either as a daughter or as a consort. And though the heir to all the dominions of the house of Austria was desirous of your alliance, yet you generously declined the prospect of a crown that was inconsistent with the enjoyment of your religion."

The talent and skill of several members of the magnificent college of Christ Church, graduate and undergraduate, noble, gentle and simple, were put in requisition. For one, we have Viscount Beauchamp, eldest son of the Earl of Hertford, expressing himself in dignified heroics. (His full name and style stand as a signature at the end of his composition in this wise: "Franciscus Seymour Conway, Vice-Comes de Beauchamp, Honoratissimi Comitis de Hertford, Fil. natu maximus, ex Æde Christi.") The piece is addressed *Ad Regem*, in the usual strain. We quote the passage which contains the word *America:*

Aspice jam quantis se attollat gloria rebus
Angligenûm! spoliis illic, frænoque potita
Supposito victrix dominatur in æquore classis;

Hic nova captivis fluitant insignia muris
Americæ; validas sensit Germania vires,
Sensit et extremus septem per flumina Ganges, &c. &c.

"Lo! by what exploits the glory of the English race mounts high! Yonder, possessing itself of spoils and of the power of control, their victorious fleet dominates the subject ocean: here, from the captured fortresses of America their ensign floats, a novelty. Germany hath felt their prowess: remote Ganges along its sevenfold tide hath felt it."

Charles Agar, B.A., student of Christ Church, likewise addresses the King. He introduces the St. Lawrence by name:

Jam Britonum genus omne simul Regemque Patremque
Te solum vocat, afflictis succurrere rebus
Qui poteris, regnoque graves impendere curas.
Seu spectas vestris Libyæ quà terra subacta
Imperiis effundit opes, et lætiùs effert
Libertas se pulchra, jugo vinclisque soluta
Jam primùm: seu quà sævo Germania fervet
Milite, tot cædes nondum miserata suorum,
Irarum impatiens: seu quà Laurentius amnis
Litora jam tandem pacatis alluit undis.
Hæc tibi sint curæ, Tuque hæc servare memento.

"Thee solely, the whole British race salutes at once King and Father, as being able to give aid to their troubled affairs, and to bestow earnest care on the Empire. Whether thy glance is directed to where Libya, subjected to thy sway, pours forth her wealth, where fair Freedom bears herself all the more joyously for now being for the first time from yoke and fetter released; or to where Germany, with her fierce soldiery, rages, unable to restrain her wrath, unpitying yet the multiplied deaths of her own sons; or to where the Laurentian stream laves its shores at length at peace. Let these possessions be thy care: these possessions be thou mindful to guard."

Another member of Christ Church, Robert Bernard, a fellow-commoner, vents his patriotic enthusiasm in senarian iambics. We give the sentence in which he finely personifies the St. Lawrence, as poets are wont to do with noble streams. He applies to the Canadian stream the title of "Father," which it is awkward to attach in English to our river. We can say with propriety Father Thames, Father Rhine, Father Tiber; but from the associations connected with the proper name "St. Lawrence," we feel that it is impossible poetically to prefix "Father" to it, when designating our river. He alludes to pageants

exhibited in the streets during the rejoicings for successes in the East and West. The Latin signature at the end informs us that Mr. Bernard was the eldest son of a baronet. It thus runs: "Robertus Bernard, Bar. Fil. Nat. Max., ex Ædc Christi, sup. ord. com." He apostrophises Britain:

O prole gestiens virûm, Britannia,
Cui cærulæ per impotentia freta
Dedere fasces imperi Nereides,
Quali tuorum læta plausu compita,
Cum rapta Georgio viderent auspice
Tropœa victis hostibus deducier!
Hic aurifer reconditos Ganges sinus
Tibi reclusit; hic pater Laurentius
Ibat minori vortice; hic portus tuos
Alacris subacto pinus intrat Hespero, &c. &c.

"O Britain! rejoicing in a progeny of true men, to whom over all the raging seas the green Nereids have given the fasces of empire, with what cheering from thy sons were thy streets made joyous, when, under the auspices of thy George, they beheld the trophies won from the vanquished foe borne along! Here for thee the gold-bearing Ganges disclosed its sinuous windings long concealed: here St. Lawrence (pater Laurentius) flowed, its whirling tide abashed: here, the Western world subdued, thy swift barks are seen entering its ports, now thine own."

John Wodehouse, also the eldest son of a baronet, and a fellow-commoner of Christ Church, adopts the metre chosen by Mr. Bernard. He cleverly imagines a veteran narrating, over his cups, to his great grandson, exploits destined to be performed during the reign of the new King. He expressly names America, and refers to its vast lakes:

Festis diebus lætus inter pocula
Miles, revinctus laureâ canum caput
Hoc Rege gesta, vel triumphos nobiles
Jactabit olim: et, Georgii senis memor,
Qui militaret ipse patria procul,
Quæ dux et ipse gloriosa fecerint:
Americæ sinus, et immanes lacus,
Comata sylvis montium cacumina,
Gravesque lapsus fluminum, urbium situs,
Et barbarorum corpora, et vultus truces,
Et sæva dicat arma, et usus horridos:
Dum mira pronepos stupebit audiens,
Et vera forsan credet esse fabulas.

"Joyful amid his cups on festive days, his gray head crowned with laurels, the soldier will boast hereafter of his exploits under this King, and noble triumphs won; and, remembering the former George, who himself also waged wars far from fatherland, will tell of glorious deeds done by himself and his chief; will tell of the gulfs and huge lakes of America, of mountain summits clothed with forests, of sternly-rushing rivers, of finely seated cities, of the forms and murderous looks of savages, of their dire implements of war, their horrific customs: whilst his great-grandson, listening to these marvels, will stand amazed, and, it may be, deem fabulous that which is true."

We have in the *Gentleman's Magazine* for March 1759, a glimpse, somewhat too realistic, of a group, of whom it is to be hoped some survived to fulfil the poet's prediction:

"On Tuesday, the 13th instant," we are told, "about eighty Highlanders, wounded at the battle of Ticonderago, in America, set out from Portsmouth in waggons, in order to be sent, some to hospitals for cure, others to Chelsea Hospital, and the rest to return to their own country. Some of them, it is added, were so lacerated by the slugs and broken nails which the enemy fired, that they were deemed incurable."

The Regius Professor of Medicine, Dr. John Kelly, also a member of Christ Church, gives proof that the cares of his profession had not caused him to forget how to construct hexameters. We extract the passage where he names America. He is eulogising the late King:

—— Virtutis præcepta secutus
Impiger ille aderat quâ divæ causa vocabat
Libertatis; eam firmâ defendere dextrâ
Unica erat cura: Americæ quin barbara Pubes
Jura Britannorum sævis agnovit in oris,
Duraque consuerant mitescere corda, Georgî
Præsidio —— &c.

"Obeying the dictates of valour, wherever the cause of god-like Liberty summoned, he was instantly present: her to defend with strong right hand was his one care. Moreover, under the guardianship of our George, the barbarian youth of America, in all their savage coasts, became acquainted with the laws of Britons, and their stern hearts grew familiar with gentleness."

Here is a brief extract from the production of another Christ Church man, John Crewe, senior, a fellow-commoner. He names Canada:

En! nomen Britonum quaquâ patet Orbis, ab Ortu
Solis ad Occasum, veneratur decolor Indus

Qui Gangen potat, Canadæve in montibus errans
Incultus, certo sibi victum quæritat arcu.

"Lo! wherever the wide world spreads, from rise to set of sun, the swart Indian reveres the British name: the Indian who quaffs the Ganges, and he who, wandering rude on Canadian hills, is ever on the search, with unerring bow, for food."

Once more: a member of Christ Church, a fellow-commoner, bearing a name of archaic tone, Chaloner Arcedeckne, appears as an encomiast of the late King, whose shade he addresses. While recounting the perils from climate experienced in the war on this continent, he names the St. Lawrence, thus:

—— Tu, crescentem, Rex magne, Britannis
Latiùs extendens per inhospita litora famam,
Tentabas nova bella; licet de montibus altis
Concretas nive devolvat Laurentius undas,
Pennatusque gerat miles furtiva sub aspris
Bella latens dumis, et sylvâ tectus opacâ.

"Thou, great King, while extending for the British people, wider than ever, over inhospitable regions, their growing fame, didst engage in novel warrings, despite the St. Lawrence rolling down from vast heights his glacial masses, and the feather-cinctured brave, waging a stealthy warfare, lurking in rough thickets, protected by dense forests."

My last extract in Latin will be from some choriambic stanzas, after the manner of Horace in the ode *Scriberis Vario*, and elsewhere. The author is no less a personage than the Duke of Beaufort of the day. He was of Oriel. The signature runs thus: "Illustrissimus Princeps Henricus, dux de Beaufort, è coll. Oriel." We again have Canada expressly mentioned. Under the name of Agrippa, the right-hand man of Augustus, the elder Pitt is personified. The young King is adroitly converted into Octavius; and George II. is then, with some appropriateness, spoken of as the deified Julius. The whole composition shows great tact and skill. The poem is addressed to the new King. We select the passage where Canada is met with, in very classic company:

Nec te pœniteat quòd mediis novus
Rerum undis subeas: En lateri assidet
Agrippa eloquiis et consiliis potens,
Octavi Juvenis, Tuo!
Sævi illo moderante impavidâ manu
Belli frœna, niger solibus Africus,

Semotæ et Canadæ barbarus incola,
Duris pellibus horridus,
Senserunt Britonûm quid potuit manus,
Fortunâ comite et Consilio duce:
Dum portu latuit Gallia conscio,
Ventis surda vocantibus
Orbem jam dubiis undique prælîis
Vexatum, ad Superos sidere Julio
Evecto, ecce tuis, maxime Principum,
Pacandum auspiciis vides!

"Grieve not that thou, a novice, art plunging into the very midst of the waves of public affairs. Lo! at thy side, O young Octavius, sits an Agrippa, powerful in speech and counsel. While he with fearless hand hath been guiding the reins of ruthless war, the African, sunburnt to blackness, and the savage denizens of far Canada, shaggily covered with undressed skins, have felt what a band of Britons, attended by good fortune and guided by prudence, could do. Whilst deaf to the winds inviting her forth, Gaul hath within her secret haven hidden herself, lo! thou, O greatest of princes, now that the star of Julius has risen to the skies, beholdest the whole globe, long harassed on every side by dubious strifes, destined under thy auspices to be reduced to peace."

In November 20–22, 1759, Admiral Sir Edward Hawke, at the head of thirty-three ships of the line and frigates, partly destroyed and partly drove back into the river Villaine, the Brest fleet:

"In attacking a flying enemy," Sir Edward, in his despatch, says, "it was impossible, in the space of a short winter's day, that all our ships should be able to get into action, or all those of the enemy brought to it. The commanders and companies of such as did come up with the rear of the French, behaved with the greatest intrepidity, and gave the strongest proof of a true British spirit. In the same manner, I am satisfied, would those have acquitted themselves, whose bad-going ships, or the distance they were at in the morning, prevented from getting up. When I consider the season of the year, the hard gales on the day of action, a flying enemy, the shortness of the day, and the coast we were on, I can boldly affirm, that all that could possibly be done, has been done. Had we had but two hours more daylight, the whole had been totally destroyed, or taken, for we were almost up with their van when night overtook us."

From one of the exercises in Greek verse, I made a brief excerpt, because it exhibited the name of Canada, which, as we have seen before, falls very readily into the ranks, in the nomenclature of the Greek language. J. Wills, scholar of Wadham, laments the death of the King in a strain quite Theocritean, thus:

Οἳ παρὰ τὸν Γάγγην ἱερὸν μελανώχροες Ἰνδοὶ
Θαυμάζοντο γέροντ' ἐρικυδέα πάντα δάμοντα.
Καὶ ΚΑΝΑΔΗ Γάλλους ἐκθαμβος ὁρᾶτο φύγοντας,
Χεῖρας ὀρεξαμένη τε καὶ ὅρκια πιστὰ τάμουσα.
Αὐτὸς δ', αἶ, νῦν ὤλετ', ἀδεύκεϊ ὤλετ' ὀλέθρῳ
Φίλτατος, αἶ, Βασιλεύς, μέγ' ἀπώλετο χάρμα Βρετάννων.

"The swart Hindoos, on the banks of the sacred Ganges, wondered at the illustrious old man who conquered all things; and Canada, amazed, beheld the Gauls routed, stretching forth her hands and entering into firm treaties. But He, alas! now hath perished, hath perished by a woeful stroke. The King best beloved, alas! the chief joy of the British race, hath perished!"

"The chief joy of the British race hath perished!" Curiously enough, Thackeray, in his "Four Georges," avers that the death of George II. was the beginning of an era of misfortune to England. "It was lucky," he says, "for us that our first Georges were not more high-minded men; especially fortunate that they loved Hanover so much as to leave England to have her own way. Our chief troubles began when we got a King who gloried in the name of Briton, and, being born in the country, proposed to rule it."

Here is a specimen of the scenes going on among "the swart Hindoos," along the Coromandel coast, in 1759. We quote from a report on the French side. On the 29th of April, Count Dache is off the town of Gondelour, in command of the French fleet, when a signal is given of the approach of an English squadron of nine ships. The narrative then proceeds: M. Dache immediately drew up in line of battle. At two in the afternoon the engagement began, and continued till night with great vivacity on both sides. The English retired to Madras, to repair the damage they had received. On June 1st, the English fleet, after being repaired at Madras, was again seen approaching. Count Dache immediately got under sail; but the English, rather than venture a second engagement, again retired to the coast of Madras. On the 26th of July, the English fleet again appeared; and on August 3rd, at one in the afternoon, an engagement began, "which continued with the utmost fury for above two hours." The English squadron suffered greatly in the action; and Count Dache, the account says, would have had the whole advantage, had it not been for the accident that happened on board his ship and the *Comte de Provence*, by the combustibles or fire-arrows which the English, contrary to all the rules

and customs of war, threw on board. The *Comte de Provence* was the first that suffered: all her sails and mizenmast took fire, and the flames spread to the quarter-deck, so that the whole ship would have been consumed, had not the captain of the *Duc de Bourgogne* shot in between the *Comte de Provence* and the English vessel, which continued firing broadsides, after expending all her combustibles. It was with the utmost difficulty the captain of the *Comte de Provence* extinguished the fire on board his ship. The same thing happened to the *Zodiaque*, with this difference, that the fire having gained the powder-room, she was on the point of blowing up, but was saved by the diligence of the officers. The French fleet retired, and anchored before Pondicherry on the following day. We were not again attacked. The number of French killed was 251; of wounded, 602.

From a set of heroics contributed to the Oxford volume by the Regius Professor of Greek himself, in the grand old tongue of which he was the official guardian in the university, I made no extract, as no use was made therein of the local names with which I was immediately concerned. I noted, however, that the professor did not accentuate his Greek; and that he bore a name which some years back was imagined to have a sound somewhat unclassical, even in English; but which, by association, now possesses a fine ring. The signature attached to the exercise alluded to was "S. Dickens," with the Academic suffixes of "S.T.P., ex Ædе Christi, Ling. Græcæ Professor Regius."

Among the poetical offerings at the tomb of the deceased King, and before the throne of his youthful successor, there were several in English also, duly preserved and splendidly printed in the volume which has been engaging our attention. A few specimens of these are now given, containing either the name of Canada or allusions to localities with which Canadians are familiar.

The first will be from a set of very good Spenserian stanzas, by "the Right Honorable the Earl of Donegal, M.A., of Trinity College." The Genius of the Western World is represented as appearing to Columbus during his first adventurous voyage. Among other coming events, she reveals to him the conquest by the second George of the region which she represents, his sudden decease, and the fact that a young King would succeed him, and carry on triumphantly the work begun. She broaches by anticipation the Monro doctrine, but in the interest of Great Britain. She exhibits no prescience of the diminution which the Empire was destined speedily to suffer. The Genius speaks:

"Lo! then whate'er old bards, in mystic lore,
Of regions blest, Hesperian coasts, have told,
In me shall be revealed. From shore to shore,
From Pole to Pole, one Empire I behold!
From Albion's cliffs a mighty King shall send
Secure dominion: mid the brave career,
Howe'er to death his honour'd eld descend
A youthful prince shall seize his massy spear,
Shall rise his grandsire's conquering race to run,
To rule, to bless the realms the hoary Warrior won."

W. H. Reynell, scholar of New College, contributed a copy of verses in the style and form of "Gray's Elegy." He poetically styles Canada, or New France, "Laurentia." In "royal towers," there is probably an especial allusion to Montreal and Louisbourg; also, it may be, to Quebec, and to the important forts, which had been captured from the French, of Beauséjour, Niagara, Frontenac, Ticonderoga, Crown Point and Isle Royal. After alluding to the military intervention of Great Britain on the continent of Europe, he proceeds:

"Nor yet for you, Germania, favour'd land,
Alone her heroes fight, her blessings fall;
Another clime demands her fostering hand,
Glory commands: who hears not glory's call?

Happy Laurentia, to thy farthest shore,
Lavish of life, a chosen band she led;
And to those royal towers her standard bore,
Whence fell Oppression, Gallic tyrant, fled."

In Wright's *Caricature History of the Georges*, a portion of a satirical picture, of the year 1754, is given, in which the British lion is represented as plucking feathers from the tail of a Gallic cock; the feathers under the lion's paw being severally inscribed with the names of the French forts in North America, "Beau Séjour," "Fort St. John," "Crown Point," "Ohio," "Quebec," &c.

S. Bradbury, commoner of Wadham, adopted, in his exercise, the ordinary English epic measure. He expressly employs the epithet "Canadian." All the successes of the British arms during the late reign are attributed to the King himself. Thus he speaks:

"Witness, thou sun, whose vivid beams are shed
On every clime, how wide his conquests spread,
Or on the Atlantic, or Pacific main,
Or Libya, or the bleak Canadian plain."

Henry Theodore Broadhead, gentleman commoner of Trinity College, wrote in blank verse. He employs the epithet "Canadian." With him "Laurentia" denotes the river St. Lawrence. Ontario and Erie figure in his composition. He anticipates the re-establishment of peace, and the gratitude of the world to George III. He even conceives the existence, at a future day, of an "Oxford" on "the Atlantic shores," nay, a "fane to science sacred" on "Ontario's meads," "where nature revels most;" a devoted University, where, "a thousand ages hence," professors, graduates and undergraduates would be, like himself and his compeers in their day, chanting the glories of one "born of Brunswick's line." We shall observe, however, that Mr. Broadhead had not as yet been put in possession of accurate information as to the fauna and flora of the surroundings of his expected seat of learning. He sings of "Canadian bards" reclining beneath "the plantane or the citron grove," and of the "hunter youth" of the land feasting on "the boar"—the boar, it is presumed, taken in the chase.

"——— What realms remote
Shall bless his potent influence, when the fiend,
Insatiate War, with carnage gorged, shall drop
The blunted spear, reluctant, at his word
And gracious call! The tawny tribes that watch
The lion's footsteps, in the sultry sands
Of Afric printed; the furr'd swains that pine
Near Hudson's frozen straits, in games uncouth,
Around their midnight fires, shall meet to praise
His name rever'd, who joins to distant Thames
Laurentia's thundering waves. In numbers wild,
Wild above rule or art, Canadian bards,
Beneath the plantane stretch'd or citron grove,
Shall carol George's acts: the hunter youth
Shall listening stop in full career, and leave
The boar untasted. The true hero scorns
The warrior's meaner fame, exults to spread
Concord and harmony, and social life
Guard and refine. The time may come when Peace,
Diffusing wide her blessings, on thy banks,
Romantic Erie, or Ontario's meads,
Where Nature revels most, may build a fane
To science sacred; snatch the murderous knife
From the grim savage, tame his stubborn heart
With arts and manners mild, and gently bind
In true Religion's golden band, the States
Of lawless, hapless wanderers. There may rise

Another Oxford, on the Atlantic shores
Still fond, a thousand ages hence, to chaunt
Some future hero born of Brunswick's line."

The establishment of universities on this northern continent early entered into the schemes of philanthropists. Harvard University was founded in 1636, and Yale in 1700. Bishop Berkeley's name is associated with a chivalrous effort of the kind in the reign of George II. But his institution was to be set up in Bermuda, or "the Summer Islands," for the benefit of "the youth of our English plantations." Swift, in a letter to Lord Carteret, Lord Lieutenant of Ireland, in 1724, introduces Berkeley and his scheme in the following humorous style: "He (Berkeley) is an absolute philosopher with regard to money, titles and power, and for three years past hath been struck with a notion of founding a university at Bermuda, by a charter from the Crown. * * He shewed me a little tract, which he designs to publish, and there your Excellency will see his whole scheme for a life academic-philosophic of a college founded for Indian scholars and missionaries, where he most exorbitantly proposeth a whole hundred a-year for himself, forty pounds for a fellow, and ten for a student. His heart will break if his deanery be not taken from him, and left at your Excellency's disposal. * * Therefore do I humbly entreat your Excellency," Swift continues, "either to use such persuasions as will keep one of the first men for learning and virtue quiet at home, or assist him by your credit to compass his romantic design, which, however, is very noble and generous, and directly proper for a great person of your excellent education to encourage." Berkeley's famous lines, written in prospect of the speedy establishment of his college, partake of the exalted ideas indulged in by the Oxford versifier:

"There shall be sung another golden age,
The rise of empire and of arts,
The good and great inspiring epic rage,
The wisest heads and noblest hearts.
Not such as Europe breeds in her decay;
Such as she bred when fresh and young,
When heavenly flame did animate her clay,
By future poets shall be sung."

The establishment of a university formed, it will be remembered, a part of Governor Simcoe's scheme for the organization of his new province of Upper Canada. To account for the epithet "romantic," applied to Lake Erie, we must have recourse to the early French

writers on America. La Hontan, in his *Memoires de l'Amérique Septentrionale*, unaccountably says of that sheet of water: "C'est assurément le plus beau qui soit sur la terre." (ii. 20.) Charlevoix, as he journeys along its northern coast, writes more calmly; but even he employs such language as the following: "In every place where I landed, I was enchanted with the beauty and the variety of the landscape, bounded by the finest forest in the world." (ii. 2.) It is interesting to know that it was Charlevoix's account of this region that induced the distinguished pioneer of Canadian civilization, Col. Talbot, to form his settlement there. See "Life of Colonel Talbot," by Mr. Ermatinger, of St. Thomas, page 13; also Mrs. Jameson's "Winter Studies and Summer Rambles," ii. 11.

We come next to an extract, in vigorous blank verse, like the last, from a piece contributed by "Thomas Leigh, M.A., Magd. Coll." He makes Britannia herself bemoan the sudden death of the King. She says:

> "——— What now avails
> That in the embattled field upon my spear
> Perch'd Victory, whilst o'er the subject main
> My conquering fleets have spread their canvas wings
> From Ganges to the river on whose banks
> The scalping Indian, nursed in Murder's arms,
> Quaff'd the ensanguined stream, which erst (ere Wolfe's
> And Amherst's heaven-assisted swords forbade)
> With British blood flowed purple to the vast
> Laurentine Gulf."

The Amherst here coupled with Wolfe is Major-General Jeffrey Amherst, to whom Montreal was surrendered, September 8th, 1760. He was afterwards Lord Amherst. We have in the December number of the *London Magazine*, 1760, a "Martial Song" on the Taking of Montreal, with music: the whole "presented to His Royal Highness the Prince of Wales." Amherst is its hero. In a list of new publications, given in the March number of the same volume of the *London Magazine*, an ode, entitled "Canadia," is mentioned; price 1s.; published by Dodsley: also "Quebeck," a Poetical Essay; price 1s. 6d.

In the blank verse of J. Fortescue, B.D., Fellow of Exeter College, we have some very strong expressions of regard for the late King. Posterity, it was predicted, would kiss the greensward once trod by him, at Kensington. The metaphor of the setting and rising sun is once more employed. Pitt is adroitly introduced; Canada is named, and

its conquest by Britain is patriotically declared to be a rescue from "Gallic slavery." Our extract thus proceeds:

"No more thy walks, O Kensington, shall see
A presence more august; nor shall thy plants
Which grew beneath his fostering hand, perceive
A kindlier influence. 'Here he stood'—
'Here walk'd'—shall late posterity remark,
And reverentially kiss the sacred ground,—
'Planning with thee, O Pitt, successful schemes,
Determining the fate of kingdoms; while
Thy realms, O Canada, that too long groan'd
The Gallic slavery beneath, restored
To smiling freedom, own his gentle sway.
Him as another sun the western world
Revered declining, anxious for his fate,
Till Thou, another orb, as heavenly bright,
With every art and early virtue graced,
The loss repairing, lead th' auspicious Hours.'"

Canada again is expressly named in the poem of "the Right Hon. the Earl of Abingdon, of Magdalen College." He adopts the Pindaric style, and arranges his matter in a series of strophes and antistrophes. In a stanza relating to the triumphs of the reign of George II. in different quarters of the globe, he excitedly exclaims:

"Hark! hark! the feather-cinctured Muse that roves
O'er Canada's high-trophied shore,
Calls to the sable nymph that dwells
Amid the thunder-echoing cells
Where Senegal's rough waters roar,—
Calls to the Muse sublime that swells
Her voice in Asia's spicy groves,
And oft her glowing bosom laves
In the rich Ganges' sparkling waves,
To chaunt the triumphs that have crown'd
The second George's arms;
To chaunt the blessings they have found
In British virtue, thro' the world renown'd,
And British freedom's unresisted charms."

That the same ideas should occur to our versifiers was, under the circumstances, inevitable. We have several times already heard what "Thomas Foley, Gentleman Commoner of Magdalen," says in his address to the shade of the departed King. The author was probably youthful. The excerpt is given for the sake of the name of Canada occurring therein:

"George, thy giant race is run,
Unclouded sets the British sun;
Glory marks the parting rays,
The vast Atlantic spreads its blaze
From vanquish'd Canada to India's main:
Mighty Lord, on mortal sight
Beams no more thy glorious light;
No more shall empire's sacred toils,
Asian triumphs, naval spoils,
America's extended reign,
No more shall win thee from the realms of day;
Unfettered springs the soul, and spurns the abode of clay."

As a curiosity, the opening of Shute Barrington's expression of Academic sorrow was selected. Canadians, proud as they are of their British descent, are nevertheless apt to forget the eponymous hero of their race. They may refresh their memories by a perusal of Shute Barrington's address to the "Genius of Britain." He thus begins:

"Genius of Britain! who with ancient Brute,
Didst visit first this goodly soil, here fix
Thy glad abode, with more than Argus' watch
To guard its welfare: say, for well thou know'st,
When in thy people's sorrow hast thou felt
Thy deepest wound? When mourn'd thy heaviest loss?"

It was not, he proceeds to explain, when Edward the Third, ever victorious over France, expired; nor when Elizabeth died; nor when William the Third departed this life; but when the late illustrious George deceased. As to Brute, the chronicles affirm that he was great-grandson of Æneas; and that in the year of the world 2855, he came to England from Troy, accompanied by certain Grecian philosophers; that they settled first at Greeklade (Cricklade), in Wiltshire, and thence removed to a place called Ryd-ychen, a name, "denotans," says Antony à Wood, in his Historia et Antiquitates Universitatis Oxoniensis, p. 10, "vadum-boûm, id est, Oxonium, apud Britannos." At Totness, in Devonshire, I was shown, not long since, the "Britstone," which still marks the spot where Brute is said to have landed in Britain. The tide-water of the beautiful river Dart must have pushed farther inland in 2855 than it does at present. The tradition indicates that here, at a very primitive period, traders from the Mediterranean exchanged commodities with the inhabitants of the Forest of Dartmoor and the surrounding region. The whole signature of the writer of the verses of

which a specimen has just been given, is as follows: "The Hon. Shute Barrington, M.A., Brother to the Lord Viscount Barrington, one of His Majesty's Chaplains in Ordinary, and Fellow of Merton College." He was afterwards a famous prince-bishop of Durham, and an early friend and patron of the late Bishop Phillpotts of Exeter.

Sir Gerard Napier, Bart., of Trinity College, furnishes some blank verse. Our extract was made for the sake of the adulatory reference to Pitt, who is represented as having begun to form, while yet a student at Oxford, plans "fatal to Gallia's visionary hopes." The elder Pitt had been a member of Trinity College, in that university. He himself, while there, had perpetrated Latin verse on the occasion of a royal death—that of George I. "Allen" is a river in Dorsetshire, which falls into the Stour near Blandford. We gather from Sir Gerard's words that certain members of the University had been honored with a request to write on the twofold occasion which Oxford in its loyalty desired to commemorate. He exhibits an affectionate appreciation of Oxford as a place of beauty, and as congenial to the pursuits of science. He thus speaks:

> "This humble strain, near Allen's silver tide,
> That winds with vocal lapse its easy way
> To Blandford's vale, from Rhedycina's view
> Estrang'd, yet mixing with the letter'd tribe,
> Mean suitor, I indite; nor of her call
> Unmindful, nor of that well-favour'd spot,
> Where late I traced the scientific page;
> Whose spacious walks and winding alleys green,
> With blended foliage sweetly interchang'd,
> Prompted to woo the solitary muse,
> And calm with noontide breeze intemperate heat.
> Blest haunt! where once, in speculative search,
> Industrious Pitt indulg'd the lonely step,
> And formed, deep-musing, the commercial plan,
> Fatal to Gallia's visionary hopes:
> Who now his counsel sage with patriot zeal
> Dispenses, and unrivalled still attracts
> His Sovereign's favour, and his country's love."

The popularity of Pitt, at the time of the composition of these verses, was immense. It was the intention of the Corporation of London, that the bridge over the Thames, afterwards known as Black Friars, should bear the name of Pitt. The following is a translation of the inscription engraved on the plate deposited in the foundation-

stone of this bridge, on the 31st of October, 1760: "That there might remain to posterity a monument of this City's affection to the Man who, by the strength of his genius, the steadiness of his mind, and a certain kind of happy contagion of his probity and spirit (under the Divine favour and fortunate auspices of George II.), recovered, augmented and secured the British Empire in Asia, Africa and America, and restored the ancient reputation and influence of this country amongst the nations of Europe, the citizens of London have unanimously voted this bridge to be inscribed with the name of WILLIAM PITT."

In a contemporary account of a royal visit to the city, in the year of the coronation, we have the following description of the reception given to Pitt by the crowd in the streets: "What was most remarkable," the writer says (An. Reg. 1761, Chron. 237), "were the prodigious acclamations and tokens of affection shown by the populace to Mr. Pitt, who came in his chariot, accompanied by Earl Temple. At every stop, the mob clung about every part of the vehicle, hung upon the wheels, hugged his footmen, and even kissed his horses. There was a universal huzza; and the gentlemen at the windows and in the balconies waved their hats, and the ladies their handkerchiefs. The same, I am informed, was done all the way he passed along."

From the contribution of R. Heber, M.A., of Brase-nose College, father of the well-known Bishop of Calcutta, and of the famous *helluo librorum*, Richard Heber, two lines were selected, on account of the familiar sound of one of them—

"The brightest jewel in the British crown."

With us, I believe, this phrase is chiefly held to describe a colony of Great Britain, and Canada *par excellence;* but in the text where it is found, its application is to something quite different. It there appears as an apposition to an honorable prerogative enjoyed by the Sovereigns of England:

"To reign in freeborn hearts is true renown,
The brightest jewel in the British crown."

One more brief extract and we have done. There is again no reference by name to Canada or this continent therein, but it helps to illustrate the general contents of the volume which has been engaging our attention; and is a specimen of a kind of production insipid enough, as it seems to us, but which was once in high repute not only in the

University of Oxford, but throughout England. The exercise of "the Right Hon. Lord Charles Grenville Montagu, second son of his Grace the Duke of Manchester, of Christ Church" (so runs the signature at its close), is a Pastoral, after the manner of one of the eclogues of Virgil. There is in the composition a curious mixture of the ancient and partially modern; of the classic and the English of the time of Chaucer.

Two shepherds discourse: one of them dismally laments the recent death of him that was, as he speaks, "hight of shepherds all, the King." This old shepherd King is styled Tityrus. The successor to the pastoral monarch is then alluded to. One Damœtas, Colin, the speaker, says, has pointed him out to him—a youth, as he describes him,

> "——— of peerless praise
> And modest mein, that ever generous mind betrays."

Damœtas himself, the shepherd observes, is one "deeply skilled in wise foresight, and much of all admired for learned fame." The lines to which I confine myself are the address of Damœtas to Colin, on showing him the King:

> "Colin, quoth he, thilk lovely Lad goes yon,
> Master is now of all this forest wide,
> (Si' that great Tityrus his life hath done)
> And well shall keep: ne hence with sturdy stride
> Shall derring wolf our nightly folds annoy,
> Ne subtle fox, what time the lambs for dam 'gin cry."

Possibly this piece, with its antique, homely English, may have been relished as much as any in the volume by the young King, who in after years was popularly known as "Farmer George." "Thilk lovely lad goes yon" recalls the copper-plate frontispiece of the *London Magazine* for the year 1760, which represents the following scene, as explained to the reader in the periodical itself: "Britannia mourning over an urn, on which is the profile of his late Majesty. Justice and Religion are consoling her, by showing the person of our present most gracious Sovereign, accompanied by Liberty and Concord: PROVIDENCE is placing the British diadem on his head; Mercury, the god of Commerce, with the Cornucopia at his feet, denoting the present flourishing state of our Trade. The obelisk in the back-ground may serve to commemorate the death of his late Majesty." All these symbolical objects are depicted with great spirit and grace: the young King is represented as a smiling stripling.

George III. does not appear to have possessed the poetic sense very strongly. He expressed his regret that Milton had not written *Paradise Lost* in prose. In the spirit of complaisance, a "gentleman of Oxford" accordingly provided a version of the work in the form suggested by the royal taste. Occasionally a volume is to be met with in the old booksellers' stalls, bearing the following title, "Milton's Paradise Lost, State of Innocence and Fall of Man; rendered into Prose; with historical, philosophical and explanatory Notes, from the French of Raymond de St. Maur, by a Gentleman of Oxford." This is the work. It is in octavo shape, and was printed at Aberdeen, in 1770.

A poem on the death of George II., by R. Warton, the Professor of Poetry, and the respectable author of the History of English Poetry, is preserved in the "Elegant Extracts." From its contents, it appears to have been one of a number of contributions from Oxford. I am not sure that it was not the opening piece in the Bodleian folio. Warton indulges in the customary adulation of Pitt, and prays him to accept the volume as an appropriate offering from Oxford. "Lo! this her genuine love!" he says; and, writing from Trinity College, of which Society he was a fellow, he intimates that the gift will probably be all the more agreeable, as that was *his* college also—the college likewise, he takes occasion to say, where the great Lord Somers, the famous Chancellor and statesman of King William's day, had studied; and where Harrington wrote his *Oceana*, a work, like the New Atlantis of Plato and the Utopia of More, descriptive of a transcendental human community. Thus he concludes, expressing the opinion that now, by the aid of Pitt, and under the auspices of the new King, the speculations of Harrington, on the subject of a perfect Commonwealth, are realized:

> "Lo! this her genuine love!—Nor thou refuse
> This humble present of no partial muse,
> From that calm bower which nurs'd thy youth
> In the pure precepts of Athenian truth:
> Where first the form of British Liberty
> Beam'd in full radiance on thy musing eye;
> That form, whose mien sublime, with equal awe,
> In the same shade unblemish'd Somers saw:
> Where once (for well she lov'd the friendly grove
> Where every classic Grace had learn'd to rove)
> Her whispers wak'd sage Harrington to feign
> The blessings of her visionary reign;

That reign which now, no more an empty theme,
Adorns Philosophy's ideal dream,
But crowns at last, beneath a George's smile,
In full reality this favour'd Isle."

Here my notes from the Bodleian folio end. We can gather from what has been presented, that which we gather also from the contemporary literature of the day, of every description, that in 1759, '60, '61–'64, Canada was occupying a very large space in the public mind of England. The public imagination pictured to itself, after its own fashion, a conquest of immense importance to the empire, and of immense extent; failing to master, nevertheless, after all, as events have proved, and still continue to prove, the true character and actual magnitude of the prize which had been won. Should England at a future time be stirred to put forth her strength for the retention, by force of arms, of this great region, it will be the tradition of the exultation of her people over the acquisition in 1759 that will move her to do so, more than the desire to hold possession of a domain unproductive of national advantage to herself directly—entailing, on the contrary, on herself several embarrassments. Let the national pride be touched by a reawakening of the memories of the close of the second George's reign, and the decision of England would be promptly expressed in the memorable language of good William the Fourth, when the Maine boundary question was in agitation,—"Canada must neither be lost nor given away!"

We may be sure that Cambridge was not behind Oxford in its formal expressions of academic grief and joy on the demise of the crown in 1760. Cambridge was always held to be, in an especial degree, Hanoverian and Whiggish. Sir William Browne's famous epigram will be remembered, on the Donation of Books by George I. to Cambridge, at the moment when, as it happened, a regiment of cavalry was being despatched to Oxford, in 1751:

"The King to Oxford sent a troop of horse,
For Tories own no argument but force;
With equal care to Cambridge books he sent,
For Whigs allow no force but argument."

This, it will be remembered, was in reply to Dr. Trapp's wittiesm on the same occasion, in the Oxford interest, which ran very irritatingly as follows:

The King observing with judicious eyes,
The state of both his Universities,

To one he sent a regiment; for why?
That learned body wanted loyalty.
To th' other he sent books, as well discerning
How much that loyal body wanted learning."

At the time of my last visit to the Public Library at Cambridge, my attention had not been turned to the point dwelt on in this paper. During the few hours that I was enabled to spend in that vast labyrinth of books, unsurpassed by the Bodleian itself in its air of venerableness and in the richness of its treasures, I was engaged in obtaining momentary glimpses of a *Cicero de Officiis*, printed by Faust in 1466; a manuscript of the Bible, in English, of the year 1430; the Catholicon, printed in 1460, by Guttenberg; a copy of Coverdale's Bible, and a multitude of Caxtons. Otherwise, a volume of contemporary academic exercises of the date of 1760, fellow to that accidentally stumbled on at Oxford, might readily have been found. The shapes, style and flavour of the pieces would, without doubt, have resembled those of the samples that have been supplied to the reader with sufficient abundance from the "Pietas Oxoniensis." I find evidence of the existence of the Cambridge volume, in an epigram to be read among those in the "Elegant Extracts." For the sake of a piquant antithesis, an epigrammatist will, as all the world knows, say almost anything. The assertion of this writer, therefore, that the Cambridge productions on this occasion were inferior to the Oxford ones, both being bad, has not much weight. It is entitled "The Friendly Contest," and reads thus:

"While Cam and Isis their sad tribute bring
Of rival grief, to weep their pious King,
The bards of Isis half had been forgot,
Had not the sons of Cam in pity wrote;
From their learned brothers they took off the curse,
And proved their verse not bad by writing worse."

It is certain that Cambridge erected a magnificent statue of George the Second, of life size, in marble. It stands to this day on a pedestal in the Senate-house, on the left side as the visitor passes up to the Chancellor's chair. The sculptor's name was Wilton. I have spoken of this statue before, on more than one public occasion. It represents the King, according to the taste of the age, in the dress or undress of a Roman imperator. He leans on a truncated column, round which obliquely passes a series of medals commemorative of military successes; and he encircles with his right arm a globe duly marked with meridian

lines, and showing the Western hemisphere, across a goodly portion of which is engraven, in characters of a considerable size, the word CANADA. From the moment, long ago, when I made the discovery of this inscription, while in jest brushing off, "*à la* Niebuhr," from the orb round which the arm of the King was thrown, some of the accumulated dust of years, this statue—which to persons in general is not especially attractive—became, to me, an object of peculiar interest; as, I think, it will also prove to any other Anglo-Canadian, who, when passing through Cambridge, may, for the sake of seeing his country's name in a situation so unique, step into the Senate-house and examine the statue which it contains of George II.

The Latin and Greek pieces, from which we have been giving extracts, have rendered the idea of Canada in classic guise, and in the midst of classic surroundings, familiar to us. It happened that, like Stadacona, Hochelaga, Cacona, Kamouraska, Muskoka, and other now familiar names, Canada, in the lips of the first immigrants, underwent little or no change—none in the termination. In passing into Latin, it consequently required no manipulation to make it conform to the laws of that tongue. It became at once a feminine proper name of legitimate form, and admitted of "declension," like any other name of a country ending in *a*.

In French, strangely, Canada is a masculine noun. We shall remember that it used to be "Bas Canada," "Haut Canada." Had the word assumed, by some chance, a form resembling "Acadie;" then it would have been feminine in French, on the analogy of the numerous feminine names of regions with that termination. And then in Latin (as in English), it would have been Canadia, as from Acadie has come the beautiful word Acadia; and from Algérie, Algeria. (We have seen that there was a poem published in 1760, entitled "Canadia.") But entering the French language unchanged from the aboriginal tongue, it remains masculine. We may suppose "le pays" to be understood before it; and that the full expression really is "the Canada country," as we say, "the Lake Superior country," "the Hudson's Bay country." The French poetic imagination must have suffered a certain degree of violence, when, as was recently the case, the "two Canadas" were impersonated on the seal of the United Province by two tall, comely females. By a rule of French grammar, to this day "Quebec" and "Ontario" are both of them of the male

sex. On a medal of Louis XIV. and elsewhere, the city of Quebec is "Kebeca.")

The most recent reappearance of "Canada" as a Latin word, is on the massive and beautiful medal by Wyon, struck to perpetuate the memory of the confederation of the British North American Provinces. CANADA INSTAURATA is thereon to be read—CANADA RE-FOUNDED, CANADA RESTORED to more than its pristine significance, to more than its original comprehensiveness. The Dominion of Canada, according to the intention of the statesmen of the mother country, is to extend from the Atlantic to the Pacific. The name had never before such a wide application as this. "New France," the old synonym for Canada, was understood by French statesmen of the reigns of Louis XIV. and Louis XV., to cover a very large area. But the geographers of those days had not yet the data for mapping out the continent with any minuteness much to the west and north of the head waters of the St. Lawrence. New France was accordingly, in their conceptions, bounded in those directions probably by the limits of the basin of that river. The name "Canada" has thus been destined to a wider and wider significance, in successive years. As a territorial appellation, it was at the outset, as we all know, a mistake on the part of the first voyagers up the St. Lawrence. The natives, coming out to the ships from different points along the river, would point to their wigwams on the shore, articulating the word "Kanata." The new comers, under the influence of the old-world notion that every region must of necessity have a distinct appellation, imagined that they heard in the frequently repeated vocable, the name of the country into the heart of which they were penetrating. It was a mistake; for we do not find that the aborigines, either here or any where else, were in the habit of forming local generalizations. They designated particular spots from some striking physical feature, or from some occurrence happening there. For areas they had, in their primitive condition, no name, in the European sense. Among the French, nevertheless, Canada became, in the manner just described, established as a regular territorial designation. The name attached itself also to the great river which had been their highway into the interior of the country. The Gulf had been named after St. Lawrence by Jacques Cartier, because he entered it on St. Lawrence's day; but the river itself was known by the supposed designation of a portion of the country through which it flowed. In the rude map accompanying my copy of the *Periegesis* of Dionysius, and

illustrating the additions of his continuator, the St. Lawrence is marked "Flumen Canada;" and in the Greek text we have, as we have heard, the stream of the "fair-flowing Canada" spoken of. In Hubert Jaillot's old map of America, of the date 1692, examined by me in 1867, in the Library at Lambeth, the St. Lawrence is called "Riviere du Canada." In this map the sea along the whole coast of the present United States is also styled "Mer du Canada."

Some of the old geographers undertook to teach that the country derived its name from the river, and so probably misled some of the writers in the Bodleian folio. Thus Gordon, in his "Geography Anatomized," a work of repute, in its 6th edition, in 1711, in a section entitled "Terra Canadensis," says the land is so called from the "River Canada," which divides it into two parts. The north part, he says, is called "Terra Canadensis Propria," and contains *Nova Britannia* and *Nova Francia*. The southern part contains Nova Scotia, New England, New York, New Jersey, Pennsylvania, Maryland, Virginia, Carolina. "Terra Canadensis Propria," Gordon continues, being the northmost of all the rest, is esteemed none of the best; but being so slenderly known as yet, he candidly says, we pass on to *Nova Britannia* and the rest. And again: Morden, author of a quarto Geography bearing the date of 1680, at page 366, teaches to the same effect. "Canada," he writes, "so called from the river Canada, which hath its fountains in the undiscovered parts of this tract; sometimes enlarging itself into greater lakes, and presently contracting into a narrow channel, with many great windings and falls, having embosomed almost all the rest of the rivers. After a known eastern course of near fifteen hundred miles, it empties itself into the great bay of St. Lawrence, over against the Isle of Assumption [Anticosti), being at the mouth 30 leagues in breadth, and 150 fathoms deep. On the north side whereof, the French (following the track of Cabot) made a further discovery of these said northern parts, by the name of *Nova Francia*."

It is true that many countries and regions on this continent were named from rivers by the European immigrants, as Ohio, Arkansas, Delaware, Iowa, Tennesee; but not Canada. Morden's expression, when he speaks of the river Canada "enlarging itself into greater lakes," reminds one of Wordsworth's allusion to the St. Lawrence in the Excursion, where he speaks of

> "——— that Northern stream,
> That spreads into successive seas."

In respect to the prosodiacal quantity of the penultimate syllable of "Canada," we may notice that the pseudo-Dionysius quoted above makes it long, contrary to modern usage. He says, as we shall remember

γαίην καλέουσι Κανάδην.

In the exercises of the Oxford versifiers, on the contrary, the quantity of that syllable is held to be short. In this connection it may be remarked that in the *Perigesis* continued, and also in the pieces contained in the Bodleian folio, the first three syllables of "America" form always a dactyl, in accordance with the popular pronunciation of the word. Nevertheless, by the old prosodiacal rule, "Derivativa eandem ferè cum primitivis quantitatem sortiuntur," the *i* is by nature long, as always in the Teutonic syllable *ric* or *reic*. *America* is from *Americus*, the latinization of the first name of Amerigo Vespucci. And Americus was a softened form of Albericus, as the name appears in my own copy of Peter Martyr *De Rebus Oceanicis et Novo Orbe-Coloniæ* 1574, where the editor Gervinus Calenius says the "Divine Favour," "terras novas majoribus incognitas, regibus catholicis, ductu atque auspiciis cum aliorum, tum imprimis Christophori Coloni sive Columbi, et Alberici Vespucii, patefecit."

One more observation relating to Canada in Latin guise must be subjoined. On the Confederation medal, bearing on its reverse the inscription *Canada Instaurata*, the Queen's head is seen veiled and crowned. Posterity will understand the artist's symbolism, and with more tenderness than some contemporaries manifested, will recall the touching devotedness of Victoria to the memory of the husband of her youth. The artist, in designing this interesting and grand head of the Queen, had doubtless in mind one of the medals of Livia, the Empress of Augustus, long "the mirror of Roman mothers," as the Historian of the Romans under the Empire speaks (v. 165). There are three rather well-known medals of this Empress existing. On one of them she is represented simply as Empress, with the common legend *Salus Augusta*. On the second she is supposed to personify *Justitia*, Justice. On the third she is represented as Pietas. On this last the head is encircled with a tiara, and is veiled. This was struck by Drusus, her grandson, during his second consulship, as inscribed on the medal itself (DRVSVS. CÆSAR. TI. AVGVSTI. F. TR. POT. ITER.), and represents Livia as the faithful widow of Augustus. It is curious to find in Tacitus (An. iii. 34) the record of an express quotation by

Drusus at this particular period, of the example of Livia as formerly a devoted wife. "Quoties," he says, in a speech deprecating the threatened prohibition of public officers taking their wives with them into the provinces, "quoties divum Augustum in Occidentem atque Orientem meavisse, comite Livia?"

The legend, "Juventus et Patrius Vigor," to be read on the Confederation medal, is from the magnificent ode of Horace, usually entitled the "Praises of Drusus"—the praises of the uncle, namely, of the Drusus who struck the medal in honor of Livia. The Drusi were a family in which bravery seemed to be hereditary. This is the burden of the ode. It was—the poet reminds the Roman people—one of this family that helped, as consul, to overthrow Hasdrubal at the Metaurus, B. C. 207, the event that brought about the final retirement of Hannibal from Italy.

Whoever it was that selected the legend for the medal, he has adroitly given a hint therein of the modern policy of Great Britain in relation to the colonies as they become populous and strong. They may be timidly anxious still to keep under her wing; but when full-fledged, they must be taught to undertake for themselves. *Juventus et patrius vigor*, as the words stand in "The Praises of Drusus," are the qualities or instincts moving a now mature young eagle, at the very instant of his quitting the nest, to provide bravely for himself, however unwonted before was such an occupation. The young soldier, Drusus, step-son of Augustus, has no sooner quitted the home where he had been reared and trained, than, by a splendid victory, won amidst the defiles and fastnesses of the Tyrolean Alps, he lays the whole empire under an enduring obligation. He is consequently compared by the poet to the only just fledged but spirited young eaglet—

"Whom native vigor and the rush
Of youth have spurr'd to quit the nest,
And skies of blue in springtide's flush,
Entice aloft to breast
The gales he fear'd before his lordly plumes were drest,—
Now swooping, eager for his prey,
Spreads havoc through the flutter'd fold,—
Straight, fired by love of food and fray,
In grapple fierce and bold
The struggling dragons rends even in their rocky hold."

The application is obvious. This famous fourth ode of the fourth book of the Odes was previously associated with Canadian history.

The inscription on the seal of the former Province of Lower Canada was from it—

"Ab ipso
Ducit opes animumque ferro."

A part of it also is the Alcaic stanza familiar to recipients of prizes at Upper Canada College, from the time of its foundation:

"Doctrina sed vim promovet insitam,
Rectique cultus pectora roboranti,
Utcunque defecere mores
Dedecorant bene nata culpæ."

The inscription on the seal of the Province of Upper Canada was also from Horace:

"Imperi
Porrecta Majestas * * *
Custode rerum Cæsare."

But this was from the fourteenth ode of the fourth book. Formerly Virgil was held to be a source of mystic oracular responses; but with colonial ministers Horace has evidently been the favorite for such purposes. One of them (Lord Lytton) has even given the world a translation of the odes and epodes of Horace.

The seal of the province of Quebec before the division of the country into Upper and Lower Canada may be seen figured on the title page of "The Laws of Lower Canada," printed at Quebec, by J. Neilson, in 1793. Its motto, "*Externæ gaudent agnoscere metæ*," which is to be found neither in Virgil nor Horace, seems to indicate the supposed pleasure with which the new monarch was welcomed after the conquest. A king, crowned and robed, stands before a map unrolled, and points with his sceptre towards the St. Lawrence. The legend round the outer edge of the seal is "*Sigillum Provinciæ Nostræ Quebecensis in America.*"

ON THE CAUSE OF GLACIER MOTION.

BY JOSEPH L. THOMPSON.

The cause of glacial action, or, as it is more briefly termed, the "glacial theory," has been a favorite subject of discussion among geologists, from Dr. Buckland downwards. The effects of glacial action, though apparent enough in many imperishable markings and striæ in the rocks and mountain-sides in various countries in both the

old and new world, have now been satisfactorily explained. That the scratches and groovings referred to have been, and, indeed, only could have been caused by the action of rocks and stones imbedded in ice and forced over the surface of the earth, seems to have been admitted by all; but, how such immense masses of ice, extending over superficies of many square miles, should have been so impelled, has, I believe, hitherto been considered a mystery; at least, so far as I know, no cause adequate for such tremendous results has been suggested.

It may be considered presumptuous in one unknown to science, to venture to offer a solution of a mystery that has, till now, eluded the attempts of the scientific word; but I believe it to be better to try and do good, even with the certainty of failing, than to sit down in apathy without making the attempt.

It is a well known fact that all glaciers have an onward or progressive motion. The immense heaps of rocks, stones, mud, &c. (moraines), which mark the limits of glaciers, prove this beyond a doubt; as do also the differences between the summer and winter limits of the same glaciers. This motion is invariably in a direction from its source in the mountain to its extremity in the valley (for it is necessary to the formation of a river of ice that it should be confined at each side, as its lateral expansion would deprive it of its distinctive character: a valley, therefore, is an indispensable condition of a glacier), irrespective altogether of the inclination of the bottom of the valley; thus disproving the gravitation theory of Prof. Forbes, of Edinburgh, which for some time obtained favor among geologists, though, in my opinion, the theory of Prof. Agassiz, of Switzerland, was, albeit short of the truth, nevertheless, a much nearer approach to it. He imagined that the glacier being full of chinks, owing to its being composed of snow and ice, and on its being exposed to the action of the rays of the sun portions of the ice were melted, the water flowed into these chinks; and thus, by the alternate thawing and freezing of the water so lodged, the movement of the whole mass was effected. Surely never was the solution of a great scientific difficulty so nearly attained: another step, and it had been solved. It seems to me that the great defect in the learned Professor's reasoning lies in this, that the progressive motion is ascribed to the alternate thawing and freezing of the *water* in the cavities in the glacier, and the consequent contraction and dilatation of the *water*, and, by that much only, of the volume of the glacier! Now, if this were true, absolutely, it would apply with equal force to the glacier throughout its

entire course; whereas, as all glaciers originate above the line of perpetual snow, it is obvious that however well this theory may apply to as much of it as the rays of the sun might affect so as to melt it, it is absolutely certain that it could not apply to that portion where the ice does *not* melt. Another reason must therefore be sought for, that will apply to the glacier as a whole. I venture, then, with all deference, to submit the following as one that, whether it solve all the difficulties of this difficult question or not, is, I think, worth a moment's consideration. *The alternate thawing and freezing*, that is, the expansion and contraction *of the glacier, of the enormous mass of ice itself, constitutes the motive power of this extraordinary phenomena.* The melting and congealing of the water in the chinks are opposing, not assisting, forces; because, although water in the act of freezing does expand, this takes place generally and in the greatest degree at night; therefore the contraction of the bulk of the water is not coincident with, but in opposition to the expansion of the volume of the glacier by the action of the sun, which takes place during the day; and the act of contracting, consequent on the diminished temperature, and therefore increased density, or, which is the same thing, diminished bulk, takes place at night, the very time that, according to Agassiz's theory, the greatest dilatation of the mass ought to take place. These are antagonistic forces, whose effects must be neutralized. These, added to the stupendous *vis inertiæ* of the glacier itself, show the amazing power of the apparently simple action of difference of temperature upon inert matter. The resultant is easily predicated. The mass, being once set in motion, moves in accordance with a known universal law of nature, *i. e.*, that expansive forces move in the direction of the least resistance, that is, downwards towards the lower and wider extremity of the valley. It may be, and generally is, assisted by the formation of the sides and bed of the valley and laws of gravitation; though were these aids absent, it would still advance in that direction, because, being frozen and solid at the upper extremity, it could not move towards that. It is therefore shut up to go the other way, that is, in the line of the least resistance.

This seems to me to be the *rationale* of the onward motion of modern glaciers; and I see nothing in it which will bar its application to a system or series of glaciers, however extensive, however great, the operation of the laws which regulate the movements of matter being absolute and invariable.

Lindsay, February 17, 1870.

THE LAW OF COPYRIGHT.

PIKE vs. NICHOLAS.

In an article in the last number of the *Canadian Journal*, entitled "Race Head-forms and their Expression by Measurements," reference was made to a suit prosecuted in the English Court of Chancery, before the Vice-Chancellor, Sir W. M. James, in which Mr. Luke Owen Pike, a graduate of Oxford, and member of Lincoln's Inn, author of "The English and their Origin, a Prologue to Authentic English History," charged Dr. Thomas Nicholas, a professor in Carmarthen College, with plagiarism, literary piracy, and appropriation of the contents of that work, in the production of his "Pedigree of the English People." The suit is one of great interest to literary men, as it raised questions involving the practical interpretation of the law of copyright, and the whole bearings of their vested rights in their own brain-work. There is something curious in the very prosecution of a suit for the restitution of a man's rights in reference to his own published thoughts and inductions, which is calculated to arrest attention as a characteristic phase in the highly artificial development of modern civilization. In this respect the student of science stands at a peculiar disadvantage. The novelist or other caterer for popular tastes receives in general so abundant a pecuniary reward as to furnish no inadequate compensation, were his literary claims in any danger of invasion. But the laborious researches of the student of science rarely produce any more practical return for the cost of publication, than the reputation thereby acquired. It is not, therefore, to be wondered at if authors of scientific treatises should be found prone to evince even undue sensitiveness in reference to the misappropriation of the fruits of their literary toil.

It chanced that the readers of this journal had a special interest in some of the questions raised in the suit of *Pike* v. *Nicholas*; for while plaintiff and defendant figured in the reports of the trial as contending for originality of views, or priority of publication, in reference to sundry results of ethnical study and research, we had no difficulty in showing that many of those had been published by us years before, in the pages of this journal, as well as in original works. The occasion was a legitimate one for reclaiming our own; for more than one contributor to this journal has had repeated reason to complain of such ignoring of his

published views, and misappropriation of his labours. Soon after its publication, however, we received a letter from the defendant, Professor Nicholas, protesting against the article in question, in which, as he says, "with no purpose to injure, I am quite sure, but doubtless out of zeal for justice and literary honor, you do me and a book which I recently published ('The Pedigree of the English People'), a great injustice. That book and its author, I am happy to tell you, have been fully vindicated before the High Court of Appeal in Chancery." Dr. Nicholas further adds: "From what quarter you got the *ex parte* statement of facts on which you rely, I do not know; but it was clearly a quarter wholly unworthy of reliance. You have, however, based your remarks upon the facts given you, and taken Vice-Chancellor James's judgment as just and final; whereas, as now proved, it was neither the one nor the other. That judgment was at once declared, by all men acquainted with the two books, and capable of understanding the question, as absurdly unfair; and while you were making use of it in Canada to bring down upon the temporary victim a greater weight of odium, I was engaged here in vindicating, before the Lord Chancellor and Lord Justice Giffard, my own rights as an author, and collaterally your right to priority in the very matters in which you claim priority in your article of November last. As you will see from the pamphlet I send by this post,* the Vice-Chancellor's judgment has been dismissed without hesitation, and the merits of my book, as an honest and independent production, properly vindicated. If you glance at the pamphlet, although the discussion is necessarily condensed and incomplete, I think that you will see that the decree did me a gratuitous injury; and I trust that you will also see, on consideration, that the *Canadian Journal*, which has assisted in augmenting that injury, will only act fairly by making fully known to its readers the other side of the question."

The *Canadian Journal* cannot be justly accused of going beyond its legitimate province, in giving publicity to a judgment of the English Vice-Chancellor on an important question of literary copyright, in which its own contributors had special claims and rights involved; nor can we, with propriety, be charged as having "taken the Vice-Chancellor's judgment as just and final." Its finality was a question

* An Examination of Vice-Chancellor James's Judgment," with an account of its dismissal by the Court of Appeal in Chancery, in the case of the book entitled "The Pedegree of the English People," by Thomas Nicholas, M.A., Ph. D., F. G. S.

wholly beyond our cognizance. As to its justice, our notice of the evidence was chiefly directed to show that much of the asserted claims to originality on which it was based; did ourselves injustice, and could not be sustained. That the decision of Vice-Chancellor James was appealed against, and has since been reversed, may indeed be reason for further review of the subject, in the light of new facts that have transpired, but at the date of publication of the article referred to, his judgment was the latest fact in the case; and, had we then known of the contemplated appeal: Mr. Luke Owen Pike, and not Dr. Nicholas, would have had most reason for objecting to a review which set forth reasons for denying the right either of plaintiff or defendant to claim originality in certain lines of research and induction, as set forth in the evidence, or to priority in publication of the results.

In reality, it appears to us that Mr. Pike's great error was his choice of the tribunal to which he appealed, the final award of which is now so triumphantly produced by his rival. His book bears abundant evidence that pecuniary results were not those he had chiefly in view though doubtless they would have been no unwelcome accompanimen, of successful authorship. The sweeping judgment of the Vice-Chancellor, even had it remained unchallenged, would have carried no such weight among those whose opinion we believe Mr. Pike chiefly values, as the verdict of competent scientific and literary critics. True, the immediate award of the press is subject to many chances of error, and to still more indirect influences than any court of law; and its judgment in not a few cases depends on the little coterie, or literary clique, which controls the magisterial *We* of critical journalism. But a work possessed of any substantial merit outlives the first uncertain veerings of the critical weather-cock, and is sure to receive its true meed in the end. In the case of any book that has a recognised scientific or literary authority a dozen years after its publication, what do all the reviews that heralded its original appearance amount to? They may, indeed, have affected its immediate sale, and so, when unfavourable, have diminished the author's chances of profit; but the final estimation of the book at its true worth is independent of such bias of prejudiced judgment.

But Dr. Nicholas further asserts that the sources from whence our information was derived, whatever they were, were "wholly unworthy of reliance." Those sources are no mystery. They were the *Times*, of

April 29th, May 3rd, 25th, &c., and the *Anthropological Review*, of July, 1869. To all appearance, the one confirmed the other; and it will scarcely be assumed by impartial readers that we were producing a report "wholly unworthy of reliance," when sustained by an agreement between journals so dissimilar in sympathies and aims. But if we had had any doubts before as to the employment of reasonable diligence in informing ourselves on the subject in question, they would be removed by the pamphlet of Dr. Nicholas; for we are there warned that "the statements in the London morning papers, in reference to this case, are by no means to be relied upon;" and no more reliable sources of information are named by him. His position in this respect was indeed surpassingly grievous. Even his own counsel failed him, if they did not positively play into the hands of his opponents; for, as he says, "My counsel, to my utter astonishment, withheld all the evidence as to *common sources* which I had prepared; believing, as it seems, that the case was safe enough without it; and made silly admissions and gratuitous statements, as if on purpose to strengthen the other side." Dr. Nicholas accordingly took up his own case in the Court of Appeal; and, in spite of the proverbial fate of the client who trusts to such counsel, he is able to report: "Though no lawyer, I pleaded my own cause on appeal, and had no difficulty in overthrowing the adverse decision."

But all this belongs to a subsequent date. When we wrote, the "admissions and gratuitous statements" of Dr. Nicholas's own counsel (on his classical acquirements, for example,) were the sole record we could appeal to; and could scarcely be suspected, by us at least, of being set forth "on purpose to strengthen the other side." The author's own pamphlet was not yet written; only the ordinary and usually reliable channels of news were accessible to us; and if neither the daily press, nor literary or scientific periodicals, were to be trusted in this peculiar case, our final resort could only be to the judgment of the Vice-Chancellor.

As, however, the *Anthropological Review* is the organ of a Society, of which the plaintiff in the original suit is a vice-president, Dr. Nicholas may have some ground for his belief that its report is biased, at any rate in the selection of some of those unfortunate admissions and gratuitous statements, which naturally carried all the more weight till they were met by counter evidence in the subsequent appeal, owing to their actually forming part of the defendant's own case, as set forth

for him by his representatives in court. It will be seen, for example, from a remark in Lord Chancellor Hatherley's judgment, that he suffered under unjust imputations as to deficient scholarship; in part, at least, owing to the line of defence adopted by his own counsel; in part also, probably, from erroneous inferences, based on the comparison instituted between the rival publications in the absence of all rebutting evidence. But on this point we have even now no adequate means of judging, and can only make the satisfactory atonement for all injustices resulting from the first trial and adverse judgment, by producing the later awards of the Lord Chancellor and Lord Justice Giffard, setting aside the Vice-Chancellor's decree.

So far as could be ascertained from the reports of the first trial to which we had access—and apparently no better were available,—it appeared that sundry witnesses, of literary and scientific repute, were summoned by the plaintiff to testify their belief that certain opinions as to the physical characteristics of the British population, Saxon and Celtic, were new, set forth for the first time in Mr. Luke Owen Pike's work, and arrived at by its author as the fruits of original and long-continued research. Without either calling in question the industry and research claimed for him, or doubting that his book was the honest result of much labour, we asserted very distinctly that the opinions claimed for him by his witnesses as having been set forth for the first time in his work, were neither original nor new; but that, on the contrary, most of them had been published years before in this journal, or in other works there named. We, not unnaturally, assumed that the question of originality was submitted to the court as between plaintiff and defendant. But in this it seems we were mistaken; though no indication of the plea of mere common sources as borrowers appears to have been introduced in the original defence.

So far as Dr. Nicholas is concerned, it now seems he is perfectly contented to admit all that we then asserted, and indeed claims to have produced nearly the same in evidence before the Lord Chancellor, while still unaware of our assertion of our own literary rights. He has accordingly included among other documents forwarded to us the following "verbatim extracts from the short-hand writer's report," along with copious extracts from the final judgment of the Higher Court, with a request for their publication in the *Canadian Journal*. In compliance with his appeal, we print them here, in full:

("PIKE'S CLAIM TO ORIGINALITY IN THEORY ON LONG HEADS OF ENGLISH.")

Nicholas's Pleadings, Dec. 4, '69, *pp.* 32, *Physic. Charact.*

"Now, my Lords, it is a fact that, forgetting the contents of his book, the plaintiff (Luke O. Pike) has boldly laid claim to originality in this very matter. It is a fact that his friend Blake has sworn positively that the plaintiff advanced this theory, and *that it was a novel theory.* It is a probable fact that the Vice-Chancellor believed all this. I will give the proof.

"On page 20 of the plaintiff's evidence (short-hand writer's) we have these questions and answers:—'*Q.* You applied that conclusion (that the early British were long-headed) to your argument as regards the origin of the early British?' *A.* In regard to the origin of the early English.—*Q.* So far as that went, is that, to your knowledge and belief, an original view? *A.* Yes.—*Q.* Have you, in the course of your reading, ever found that argument applied to that particular subject? *A.* No, I cannot say that I have.'

"This distinct claim to originality was supported as follows by Mr. Blake: On page 26 of his evidence, in answer to a question by the Vice-Chancellor, he says, 'Mr. Pike's argument is, that the Celtic race had long skulls; that the Teutons had round heads and short skulls; that the modern Britons have long skulls, and therefore the modern English or modern Britons are descendants of the ancient Britons. *Q.* That is an ovel view, you say? *A.* That was novel.—*Q.* That was novel at the time Mr. Pike wrote his book? *A.* That was a novel view.' And he finishes up on this question by saying, on the next page (27): 'All French writers on the subject asserted that the Celts had short skulls.'

"Now, it is not my function to say here that this evidence is contrary to the truth. This evidence greatly influenced the mind of the Vice-Chancellor. I had not the opportunity given me of showing its inaccuracy by reference to books published prior to the plaintiff's book, and which I had brought into Court. I am anxious now to refer to one or two of these, that your Lordships may judge of the truth or untruth of these depositions.

"As long ago as 1863, Dr. Daniel Wilson's great work, *The Prehistoric Annals of Scotland,* made its appearance in a second edition; and in that work, known to all students of British Anthropology, vol. 1, p. 278, occur these words, in reference to the *modern English head-form:* 'The insular Anglo-Saxon race, in the Anglican and Saxon districts, deviates from its continental congeners, as I conceive, mainly by reason of a large intermixture of Celtic blood, traceable to the inevitable intermarriage of invading colonists, chiefly male, with the British women. But if the Celtic head be naturally a short one [a notion he is combating], the tendency of such admixture of races should have been to shorten the hybrid Anglo-Saxon skull, whereas it is essentially longer than the continental Germanic type.'

"This was published three years before the plaintiff's book. But I wish to rely rather on another publication, and for the reason that it can be proved to be in the plaintiff's possession at the time he wrote his MS. in 1865.

"The same learned writer, Dr. D. Wilson, whose views in the work already referred to had excited so much attention, published an elaborate article on the

'Physical Characteristics of the Ancient and Modern Celt,' in the *Canadian Journal*, of November, 1864, in which he at greater length developed the theory now in question. That journal is in the library of the Anthropological Society, of which the plaintiff is, and was then, a member.

"But this is not all. He might be a member of the Society, and yet not peruse this book in its library. But that article was reprinted in the *Anthropological Review*, of London, in February, 1865, just one month before the plaintiff forwarded his MS.; and that the plaintiff *saw and perused* the article in question, is proved thus: Each member of the Society, by right of membership, received the *Review*, as intimated at p. lxix. of the Society's Journal, of the same year: 'The *Anthropological Review* has been punctually supplied to each Fellow quarterly.'

"But it is clearly proved, and set beyond all question, that the plaintiff had *read* this article, by the plaintiff *himself*, although at the same time he, curiously enough, disowns any obligation to it! In a note on page 170 of his volume, he says: 'Since this portion of the Essay was written, there has appeared in the *Anthropological Review*, vol. iii. p. 52–84, an excellent paper by Prof. Wilson, of Toronto, on the Physical Characteristics of the Ancient and Modern Celt. He too has derived much of his information from the hatters. It fully *confirms* all that has been above stated.' The employment of hatters may strike one as rather an original idea; but it is a curious and suggestive coincidence that the *Canadian Journal* (November, 1864), containing Professor Wilson's elaborate measurements, furnished by hatters, British and American, had reached London before the date of plaintiff's first correspondence with London hatters, Lincoln & Bennett, &c., (December 5th and 10th, 1864.)

"This article of Prof. Wilson's, then, being thus known to plaintiff when he wrote this Essay, let me show your Lordships whether it contained the theory on the English long head-form which the plaintiff claims as his own sole invention. On page 61, *Anthropological Review*, vol. iii., 1865, Prof. Wilson writes thus: 'On this subject Dr. Anders Retzius remarks: 'During an excursion in Great Britain, in 1855, I was able to satisfy myself anew that the dolichocephalic form is predominant in England proper, in Wales, in Scotland, and in Ireland. Most of the dolichocephalæ of these countries have the hair black, and are very similar to Celts.' The Anglo-Saxon cannot be affirmed to be a pure race. Apart from later Danish, Norse and Norman intermixture, it differs mainly, as I conceive, from its Germanic congeners, by reason of a large admixture of Celtic blood, traceable primarily to the intermarriage of English and Saxon colonists with the British women. Such a process of amalgamation is the inevitable result of a colonisation chiefly male, even where the difference is so extreme as between the white and the red or black races of the New World. But the Anglo-Saxon intruder and the native were on a par physically and intellectually; and while the former was pre-eminent in all warlike attributes, the latter excelled in the refinements of a civilization borrowed both from the pagan Roman and the Christian missionary. There was nothing, therefore, to prevent a speedy and complete amalgamation. But if this was an admixture of a dolichocephalic with

a brachycephalic race, the result should be a hybrid skull of intermediate form; whereas the modern Anglo-Saxon head is essentially longer than the continental Germanic type.'

(After reference to the first edition of Dr. Wilson's Prehistoric Annals, 1851,)—

"I leave it to your Lordships now to judge of the *originality* of the plaintiff's theory in *this* branch of it, viz., the origin of the modern English long-head, and of his idea of employing 'hatters,' as well as of the nature of the depositions made by him and his friends, C. Blake and Dr. Beddoe."

So far, therefore, it does not appear that there is anything to retract in reference to what was the essential point of the article in question, in its bearing on the authorship of opinions in dispute. Neither can we be expected to retract, or apologise for, the publication of Vice-Chancellor James's judgment on this important question of literary copyright, although, at a date subsequent to our publication, the highest court of appeal reversed his decision. How far that reversal absolutely oversets the previous judgment, the reader can determine for himself. But Dr. Nicholas tells us in his pamphlet that "fully a third of the Vice-Chancellor's judgment consists of a careful statement of the plaintiff's case, in the supposed words of the plaintiff himself. There is no corresponding adequate representation of the argument on my side. This at once indicates the leanings of the judge." The leanings of his own counsel were, it would seem, in the same direction; that of the London morning papers, and of scientific and literary journals, much on a par; so that any chance of our catching an impartial glimpse of the case would seem to have been hopeless enough.

But objectionable assertions and admissions, referred to in the daily press, reported at some length in the *Anthropological Review*, and left uncontroverted, it would appear, in the Vice-Chancellor's court, came under review before the Lord Chancellor, and are dealt with, in part at least, in his final judgment. We accordingly comply with Dr. Nicholas's appeal for justice, so far as this journal is concerned, by printing the following abstracts of the judgments pronounced by the Lord Chancellor and Lord Justice Giffard. Both these extracts, and those previously produced from Dr. Nicholas's own pleadings, are given *verbatim*, as furnished by him, and include all that he has seen fit to forward to us. As has been already observed, he undertook his own case in the Court of Appeal, having met, as he believed, with scant justice at the hands of his counsel in the former trial; and to this the Lord Chancellor makes complimentary allusion in the opening sentence:

THE LORD CHANCELLOR'S JUDGMENT.

PIKE *v.* NICHOLAS.—Dec. 1869.

(Verbatim Extracts.)

"In many cases we have to regret the absence of counsel, but in the present case we certainly have no occasion to express any regret in that respect. This is peculiarly a case requiring such minute investigation and comparison as would render it difficult for counsel to find time to enter upon.

"In no respect will it be found that we shall lay down general principles in any way contrary to those which are laid down by the learned Vice-Chancellor. If we have the misfortune to differ from him, it is entirely in the application of these principles to the particular works before us. It is confessedly one of the most difficult problems brought forward for the court to solve with reference to cases of piracy, when there is a common subject with which parties start, when there are common authors which are open to both of them, and when portions of the one work which are said to resemble portions of the other work may be deduced from those common authors to which each is at liberty to resort.

"I shall first advert to the circumstances under which these works were composed, and then to the *common sources* to which it is open to either party to apply himself. I think that the Vice-Chancellor has not given sufficient weight to either of those two circumstances.

"First, there was a common origin of subject, which it is very important should be borne in mind throughout in the consideration of this case. The subject was originated in the minds of both these gentlemen by the prize which was offered for the best essay on the origin of the English Nation, &c. Therefore I find in the outset (as is to be expected) the writers of both these treatises taking exactly the same view in this respect, viz., that the ancient Britons largely preponderate as an element of the English nation. That being so, each of them would naturally begin to look about for the authors bearing on this question. . . . There are a variety of authors on the subject, especially Dr. Prichard, to whom, in the first instance, both of them would have recourse. . . . the existing evidence of language, physical characteristics, customs and habits of life, &c. . . . Therefore, before approaching the question, whether or not one author has taken from the other, it must be borne in mind that a great deal of similarity will naturally be expected to be found in the works of authors writing on such subjects as these.

"Then, as to common sources. When once it is established that there are common sources, it will naturally be expected that there will be great similarity in the statement of the facts which are narrated in those common sources. Accordingly there may be traced throughout the work of the defendant a great similarity to the outline and plan of that of the plaintiff. With regard to that part of the case, I think the Vice-Chancellor has laid a great deal too much stress upon the fact of the division of the subject in the defendant's work being similar to the division of the subject in the plaintiff's work. I am allowing at present that the defendant's evidence—I mean what he has stated on his oath,—is not to enter into the matter at all, but that we must look only to those documents.

(defendant's MSS. of the work) which are admitted on the part of the plaintiff to be genuine. The documents marked A and B must be admitted on the part of the plaintiff to be genuine, because the Vice-Chancellor has taken them as admitted. . . . Looking to these documents, marked A and B, which are the MSS. of the original treatise. . . . I find in B those very elements drawn out, and I think very naturally drawn out, which we find in the plaintiff's work. . . . But I think we must take the defendant, in his first treatise, . . . before he could possibly have seen the plaintiff's treatise, to have originated a division which was proper and peculiar to a subject of this character. I find in MS. B, physical, mental and moral characteristics referred to. . . .

"Then, starting with this as regards the plan of the work (and this is the part of the case on which the Vice-Chancellor seems in some degree to have relied), we find in the undisputed document A, the same division. . . . We find also a reference to Prichard's work, one of the common sources. It is carried on in B. . . . There is certainly enough in B to satisfy me that, without seeing the plaintiff's book [then not published], the author . . . had arrived at and mapped out a principle, . . . including, under the head of 'Physical Characteristics,' the question of colour, in which is comprehended the skin and hair, and craniology, or form of skull.

"Now, as regards common sources, I apprehend that when once it is established that there are common sources, . . . it amounts to nothing at all for the plaintiff to say, 'the defendant has cited author after author who have been cited by me;' because, when the common sources are referred to, it will be found that they both got them from the same common sources. . . . Therefore, to find Lecebonius, Tacitus, Cæsar and so on, cited, . . . really comes to nothing, when it is found they are both citing the identical passages which are for the most part to be found in Dr. Prichard's book, to which both have recourse.

"Here I was very anxious to learn whether either the plaintiff or the defendant had cited any author in addition to these referred to in this particular portion of the plaintiff's work, which is supposed to be invaded on the part of the defendant. The defendant has quoted an author from Prichard (Calp. Flaccus), who is not quoted by the plaintiff. The defendant has added to his quotations a passage from Tertullian. . . . These circumstances show clearly that the defendant went to the original source. . . . .

"This really does remove a vast portion of the subject, which seems to have impressed the Vice-Chancellor very forcibly. . . . If you refer to the common sources, then you reduce in a very material degree any legal consequences that can result from the circumstance of the books having similarity in treating of these particular heads. . . . I think the defendant has satisfactorily explained all the passages contained in the common sources, except the second passage from Retzius. . . I had another doubt as to the words *rutilatae comae*. . . Prichard makes a mistake. All through he calls this 'red hair,' instead of calling it 'reddened hair.' The plaintiff says, 'I did not fall into that error: From my classical education: I see the force of the word *rutilatae*, and I translate that "reddened hair."'

"Then, can it be said that the defendant has done exactly the same thing? Of course I cannot assume that the defendant does not know Latin. . . . He has read to us several passages in Latin, sensibly and intelligibly, and in a manner which appeared to me to show that he understood what he was reading. I am bound, therefore, to say that he is acquainted with Latin; and if acquainted with Latin, I cannot say that he could not translate the word *rutilatas* 'reddened,' just as the plaintiff had. Besides that, he evidently seems to be well acquainted with German, and he says he has looked at the German translation of Livy, and he finds exactly the same translation of the word *rutilatae* as the plaintiff's, viz., 'reddened;' showing, therefore, that from his own resources he might very well have been led to that.

"Therefore, I think the Vice-Chancellor has laid a great deal too much stress on these similarities, which are numerous, but which are well and properly accounted for.

"I come next to the part of the case which relates to the two passages of the defendant's book which have been enjoined by the Vice-Chancellor. The first passage is that with reference to Gildas, and with regard to Gildas the case is reasonably clear to my mind. . . . It must be taken as admitted ground, that on the one hand the defendant used the plaintiff's book in writing his observations on Gildas; and on the other, knowing that the subject is treated of in the *Monumenta Historica Britannica*, he went to that work, which he says they went to in common. . . .

"Then, however, says the plaintiff, 'My observations on the character of Gildas, and his prejudiced and exaggerated views, are wholly taken by you.' Upon this part of the case, again, I confess I am wholly with the defendant.. I think the defendant has taken a wholly different view from that of the plaintiff. . . . He writes a line of argument which cannot fairly be designated the same as that of the plaintiff, but must be taken to be a line of argument of his own. . . .

"Where it seems to me, I confess, the Vice-Chancellor has failed to do justice to the defendant, is in this respect: he lays great weight on the common division of the subject, which I have already gone into. . . . He lays great stress on this and that author being cited. . . . 'I cite Tacitus; so do you. I cite Licebonius; so do you,' &c. And then the Vice-Chancellor winds up by asking, 'If you did not get them from the plaintiff, where did you get them from?' I think the answer to that question is, if there be a common source, that he got them from that common source.

"But I think the Vice-Chancellor had great reason to entertain a very strong feeling of distrust. There is the *Answer*, which undoubtedly states the case in a manner which, if not intended to mislead, was calculated in the highest degree to do so. . . . I think the passage in the answer [improperly drawn by counsel, and against his instructions, stating that the MSS. produced were in an unaltered state, although it was also expressly allowed that the subsection on Gildas had been written into the text, from being in the form of a note, since the plaintiff's book had been published;] I have referred to does justify us in saying that we ought not to give the defendant his costs, because it seems to me that that passage has occasioned a great deal of the litigation, and that if the whole matter

had been stated in the answer in a straightforward manner, and clearly and at once, as it has been subsequently stated [and had from the first been stated, as far as the defendant was concerned], the plaintiff might possibly have stopped the suit altogether. . . . I am of opinion the bill should have been dismissed, but, under the circumstances I have referred to, dismissed without costs."

LORD JUSTICE GIFFARD.

"I have only a few general observations to add to the judgment the Lord Chancellor has just delivered. Beyond all doubt, in this case the plaintiff undertook a more formidable task than was ever undertaken before in any copyright case. . . . The task undertaken by the plaintiff was impossible, unless he could show that there were passages either actually copied, or copied with mere colorable alteration. It will not do to show merely one or two passages, but some material part of the book. . . . Then, upon referring to MSS. A, B, C and D, it is beyond all doubt that great labour and a large amount of time must have been employed, if the mere labour of writing those MSS. and nothing else is considered. But I am satisfied that the defendant bestowed a great deal of labour and time on these MSS. . . . I am also satisfied of this—which, when you are dealing with a question of copyright with reference to books such as this, is of great importance,—that the book of the defendant is his own composition; that, wherever he got the materials from, they were worked up by him into his own language. . . . Then that brings me to the conclusion that there has been really no such use made by the defendant of the plaintiff's book, as entitles the plaintiff to an injunction. . . . As I said before, when we have a book which is really the composition of the defendant, written in his own language, and bearing in mind the circumstances attending the writing of these two books, it will be seen that the plaintiff undertook a task which was morally impossible."

The explanatory comments of Dr. Nicholas, inserted within brackets in the preceding extracts, we have allowed to stand, as furnished by himself, so as to do him all justice in setting forth his own case. But as he has characterised our previous notice as founded on an "*ex parte* statement of facts," it could not surprise us if Mr. Pike should retort by calling this "an *ex parte* abstract of judgments;" for we find, on referring to the *Times* of November 25th, that the Lord Chancellor is reported as stating, after disposing of much which had impressed the Vice-Chancellor, on the ground of common authorities: "In three cases, however, he was of opinion that the defendant was indebted directly to the plaintiff;" and Lord Justice Giffard closes his judgment in these words: "Considering that the defendant had certainly spent labour on the MS., and had pursued a certain amount of research, the amount borrowed was not sufficient ground for an injunction. On the other hand, there were assertions in the defendant's answer which were not ingenuous, and which were even in some respects wholly

untrue. His Lordship was rejoiced that the court was able to mark its reprobation of such conduct by not giving the defendant, though successful, his costs. He trusted this would be a lesson to the defendant to act in future more frankly."

It is with reluctance that we supplement the previous abstract with those passages, from what we must assume to be an impartial report; but since we are appealed to, we are bound, if possible, not to wrong the plaintiff in seeking to accord justice to his rival. Not unnaturally, the decision of the Vice-Chancellor fluttered authors considerably, as it seemed to establish a proprietory right by mere priority of compilation, giving to the first miner in the quarry of published investigation and research a right little short of that of the original author. It was not, therefore, without reason that the *Athenæum*, in reporting that "the Vice-Chancellor's judgment was dismissed," added, "Some authors will breathe more freely after this."

Various letters addressed to ourselves expressed the unusual interest which the trial has excited among literary men. One distinguished British anthropologist thus comments on it: "I see in your paper on Race Head-forms, you take up Mr. Pike and the strange trial to which his publication and that of Dr. Nicholas have given rise. I was not surprised to see the decision reversed in this famous case. Had it remained unquestioned, there would not have been any safety. Nevertheless, I cannot help thinking that Dr. Nicholas got a great deal from Mr. Pike's work."

While thus quoting the reports and opinions of impartial on-lookers, it is only fair to draw attention to an important element in the question, which is calculated to modify such a verdict. It is not a simple case of the publication of Mr. Pike's "English and their Origin," in 1866, and then of a work by Dr. Nicholas, in 1868, under the analogous title of "The Pedigree of the English People," with as great a correspondence in plan and arguments as in title. Were this the whole case, the undoubted priority of publication on Mr. Pike's part would give him a strong claim to the preoccupation of the literary field, apart from any question as to absolute originality in views or research. But when it is seen that both publications originated in a competition at the Welsh Eisteddfod, and are in reality only expansions of rival prize essays, written at the same time, on the same subject, and to a great extent based on the same authorities, it ceases to surprise us that much should be found common to both, which nevertheless is asserted to have been

written by the one without any reference to the other's work. Dr. Nicholas thus states the case: "Some months before the appearance of my book, another, and smaller work, by Mr. L. O. Pike, had been published on a like theme. It is admitted on both sides that the subjects had been suggested to us by an announcement made by a public society. Both works were written simultaneously, but mine was the last published." So far, Dr. Nicholas states what undoubtedly constitutes an important element in the dispute. The question, however, on which the plaintiff's plea rests, as between him and the defendant—apart from any claims advanced by others to priority of publication,—is this: Did Dr. Nicholas avail himself to any extent of Mr. Pike's essay in the final preparation of his own for issue in the form in which it appears, as published under the title of "The Pedigree of the English People?" To this question the Vice-Chancellor directed his special attention in the original judgment; and the reader possesses, in the extracts now furnished from the final award of Lord Hatherley and Lord Justice Giffard, some means of determining how far they designed entirely to set aside the previous verdict.

In an appeal to the literary tribunal of the press, after an impartial recognition of all that requires to be allowed in reference to accessible sources of fact and opinion, undoubtedly turned to account by both writers, the rule must still be held good which gives to priority of publication, even in the work of compilation, certain rights of authorship which cannot be contravened. Some, at least, of the claims of Mr. Pike to originality, and his charges of plagiarism in specific passages, have not been sustained; but this fact still remains indisputable, as between plaintiff and defendant, that his "English and their Origin" was published in 1866, whereas his rival's "Pedigree of the English People" did not issue from the press till 1868.

As, however, we have quoted the comments of one distinguished British anthropologist, we shall add the more matured judgment of another, regarded as one of the most learned, as he has been one of the most laborious, amongst living British ethnologists. In thus completing our review of the questions in dispute, with every desire for an impartial award, we produce the following opinion of Dr. R. G. Latham, alike with a view to its bearings on Dr. Nicholas's claims of independent authorship, and in its more comprehensive relations to the law of copyright, in which every author has a personal interest:

"I inspected," says Dr. Latham, "at the request of Dr. Nicholas, his work entitled 'The Pedigree of the English People,' before its publication, and as it was passing through the press. I have studied it with interest since. I have especially compared it with Mr. Pike's work on the same subject ['The English and their Origin'], and that with a view of comparing the two with the decision of the Court of Chancery in favour of the author of the work first published. My personal acquaintance with Dr. Nicholas, which is but slight, has had but little to do with the investigation, which was undertaken mainly on grounds affecting literature in general. It touches every writer to know, as accurately as possible, how far a later work upon the same subject as an earlier one, from the same source, and from the same point of view, can be published without risk; in other words, how far, under a certain combination of circumstances, by no means uncommon, two works upon the same subject are possible. The matter has pressed itself upon the attention of literary men often enough before now; the domain of biography supplying the chief instances: for here, when we get two lives of the same person, from the same point of view, &c., a considerable amount of coincidence is compatible with absolute independence in the way of investigation.

"A question like the one discussed by the Messrs. Pike and Nicholas is much in the same predicament as a biography. The facts upon which an opinion can be founded are limited in number, have long been known, are in a very accessible form, and have been the object of much comment. Two writers, who make it their business to exhaust the matter thus at hand, *must* have much in common with one another. But it will be a great detriment to literature if the mere accident of priority of publication is to exclude the production of the work which possibly may merely differ from its predecessor by having been longer in the hands of either the author or the printer.

"There are not wanting instances where, when two works are published on the same or similar subjects, the writer of the later one has taken pains to tell the reader that he has abstained from the perusal of the earlier one, with the express view of avoiding the charge of imitation or borrowing. As far as I can judge, it is the general opinion that, except with works of imagination, such disclaimers are condemned rather than approved; it being the duty of the writer to put his book in the best form he can, by reading everything on the subject to which he has access.

"A single fact, statement, argument, or piece of evidence, common to Dr. Nicholas and Mr. Pike, which might not have occurred to the former writer if the latter had never existed, I, after a careful examination, have failed to find. Such is the fact. It might have been otherwise. There might have been in Mr. Pike's work data which nothing but exclusive knowledge, extraordinary scholarship in the Welsh language, access to unpublished documents, new methods of criticism, &c., could give; and for such he might reasonably claim protection. But I unhesitatingly state that there is nothing of the kind. The facts and arguments of Mr. Pike's work are the facts and arguments of a current, common literature, and not the peculiar property of any individual." D. W.

CANADIAN LOCAL HISTORY.

TORONTO OF OLD:

A SERIES OF COLLECTIONS AND RECOLLECTIONS.

(Continued from page 354.)

BY THE REV. DR. SCADDING.

XXII.—THE VALLEY OF THE DON.—FROM THE BRIDGE ON THE KINGSTON ROAD TO TYLER'S.

Retracing our steps; placing ourselves again on the bridge, and, turning northwards, we see on the right, near by, a field or rough space, which has undergone excavation, looking as though the brick-maker or potter had been at work on it: and we may observe that a large quantity of the displaced material has been spread out over a portion of the marshy tract enclosed here by a bend of the river westward. What we see is a relic of an effort made long ago, by Mr. Washburn, a barrister of York, to whom reference has been made before, to bring this piece of land into cultivation. In its natural state the property was all but useless, from the steepness of the hill-side on the one hand, and from the ever wet condition of the central portion of the flat below on the other. By grading down the hill and filling in the marsh, and establishing a gentle slope from the margin of the stream to the level of the top of the bank on the right, it was easy to see that a large piece of solid land in an eligible position might be secured. The undertaking, however, was abandoned before the work was finished, the expense probably being found heavy, and the prospect of a return for the outlay remote. At a later period Mr. O'Neill, with greater success and completeness, cut down the steep ridges of the bank at Don Mount, a short distance up, and filled in the marsh below. These experiments show how the valley of the Don, along the eastern outskirts of the town, will ultimately be turned to account, when the necessities of the population demand the outlay. At present such improvements are discouraged by the length of time required to cover large surfaces of new clay with vegetable mould. But in future years it will be for mills and factories, and not for suburban and villa purposes, that the parts referred to will be held valuable.

These marshes along the sides of the Don, from the point where its current ceases to be perceptible, appear to be remains of the river as it was at an epoch long ago. The rim or levee that now, on the right and left, confines and defines the meanderings of the stream in the midst of the marshes, has been formed by the alluvial matter deposited in the annual overflowings. The bed of the stream has probably in the same manner been by degrees slightly raised. The solid tow-path, as it were, thus created on each side of the river-channel, affords at present a great convenience to the angler and fowler. It forms, moreover, as shown by the experiments above alluded to, a capital breastwork, towards which the engineer may advance, when cutting down the adjoining hills, and disposing of their material on the drowned land below.

Once more imagining ourselves on the bridge, and looking obliquely to the north-west, we may still discern close by some remains of the short, shallow, winding ravine, by which in winter the sleighs used to ascend from the level of the river, and regain, through a grove of pines and hemlocks, the high road into the town. As soon as the steady cold set in, every year, the long reaches and grand sweeps of the river Don became peculiarly interesting. Firmly frozen over everywhere, and coated with a good depth of snow, bordered on each side by a high shrubbery of wild willow, alder, wych-hazel, dog-wood, tree-cranberry and other specimens of the lesser brushwood of the forest, plentifully overspread and interwoven in numerous places with the vine of the wild grape, the whole had the appearance of a fine, clear, level English coach-road or highway, bounded throughout its winding course by a luxuriant hedge, seen as

such English roads and their surroundings were wont to be, all snow-clad, at Christmas-tide, from the top of the fast mail to Exeter, for example, in the old coaching days.

Down the river, thus conveniently paved over, every day came a cavalcade of strong sleighs, heavily laden, some with cordwood, some with sawn lumber, some with hay, a whole stack of which at once, sometimes, would seem to be on the move.

After a light fall of snow in the night, the surface of the frozen stream would be marked all over with foot-prints innumerable of animals, small and great, that had been early out a-foraging: tracks of field-mice, minks and martens, of land-rats, water-rats and muskrats; of the wild-cat sometimes, and of the fox; and sometimes of the wolf. Up this valley we have heard at night the howling of the wolf; and in the snow of the meadows that skirt the stream, we have seen the blood-stained spots where sheep had been worried and killed by that ravenous animal.—In one or two places where the bends of the river touched the inner high bank, and where diggings had abortively been made with a view to the erection of a factory of some kind, beautiful frozen gushes of water from springs in the hill-side were every winter to be seen, looking, at a distance, like small motionless Niagaras. At one sheltered spot, we remember, where a tannery was begun but never finished, solid ice was sometimes to be found far on in the summer.

In the spring and summer, a pull up the Don, while yet its banks were in their primæval state, was something to be enjoyed. After passing certain potasheries and distilleries that at an early period were erected a short distance northward of the bridge, the meadow land at the base of the hills began to widen out; and numerous elm trees, very lofty, with gracefully-drooping branches, made their appearance, with other very handsome trees, as the lime or basswood, and the sycamore or button-wood.—At a very early period, we have been assured that brigades of North-west Company boats, *en route* to Lake Huron, used to make their way up the Don as far as the "Forks," by one of which they then passed westward towards the track now known as Yonge-street: they there were taken ashore, and carried on trucks to the waters of the Holland river. The help gained by utilizing this piece of water-way must have been slight, when the difficulties to be overcome high up the stream are taken into account. We have conversed with an early inhabitant who, at a more recent period, had seen the North-west Company's boats drawn on trucks by oxen up the line of modern Yonge-street, but, in his day, starting, mounted in this manner, from the edge of the bay. In both cases they were shifted across from the Lake into the harbour at the "Carrying-place"—the narrow neck of isthmus a little to the west of the mouth of the Don proper, where the lake has now made a passage.

We add one more of the spectacles which, in the olden time, gave animation to the scene before us. Along the winding stream, where in winter the sleighs were to be seen coming down, very summer at night would be observed a succession of moving lights, each repeated in the dark water below. These were the iron cressets, filled with unctuous pine knots all ablaze, suspended from short poles at the bows of the fishermen's skiffs, out in quest of salmon and such other large fish as might be deemed worth a thrust of the long-handled, sharply-barbed trident used in such operations. Before the establishment of mills and factories, many hundreds of salmon were annually taken in the Don, as in all the other streams emptying into Lake Ontario. We have ourselves been out on a night-fishing excursion on the Don, when in the course of an hour some twenty heavy salmon were speared; and we have a distinct recollection of the conspicuous appearance of the great fish, as seen by the aid of the blazing "jack" at the bow, nozzling about at the bottom of the stream.

XXIII.—FROM TYLER'S TO THE BIG BEND.

Not far from the spot where, at present, the Don-street bridge crosses the river, on the west side and to the north, lived for a long time a hermit-squatter, named Joseph Tyler, an old New Jersey man, of picturesque aspect. With his rather fine, sharp, shrewd features, set off by an abundance of white hair and beard, he was the counterpart of an Italian artist's stock-model. The mystery attendant on his choice of a life of complete solitude, his careful reserve, his perfect self-resource in regard to domestic matters, and, at the same time, the evident wisdom of his contrivances and ways, and the propriety and sagacity of his few words, all helped to render him a good specimen in actual life of a secular anchorite. He had been in fact a soldier

in the United States army, in the war of Independence, and was in the receipt of a pension from the other side of the lakes. He was familiar, he alleged, with the personal appearance of Washington. His abode on the Don was an excavation in the side of the steep hill, a little way above the level of the river-bank. The flue of his winter fire-place was a tubular channel, bored up through the clay of the hill-side. His sleeping-place or berth was exactly like one of the receptacles for human remains in the Roman catacombs, an oblong recess, likewise carved in the dry material of the hill. To the south of his cave he cultivated a large garden, and raised, among other things, the white sweet edible Indian corn, a novelty here at the time; and very excellent tobacco. He moreover manufactured pitch and tar, in a little kiln or pit dug for the purpose close by his house. He built for himself a magnificent canoe, locally famous. It consisted of two large pine logs, each about forty feet long, well shaped and deftly hollowed out, fastened together by cross dovetail pieces let in, at regular distances, along the interior of its bottom. While in process of construction in the pine woods through which the "Mill road" passed, on the high bank eastward of the river, it was a wonderment to all the inquisitive youth of the surrounding neighbourhood, and was accordingly often visited and inspected by them. In this craft he used to pole himself down the windings of the stream, all the way round into the bay, and on to the landing-place at the foot of Caroline-street, bringing with him the produce of his garden, and neat stacks of pine knots, ready split for the fishermen's lightjacks. He would also on occasion execute the function of a ferryman. On being hailed for the purpose, he would put across the river persons anxious to make a short cut into the town from the eastward. Just opposite his den there was for a time a rude causeway over the marsh. At the season of the year when the roads through the woods were impracticable, Tyler's famous canoe was employed by the Messrs. Helliwell for conveying into town, from a point high up on the stream, the beer manufactured at their Breweries on the Don. We are informed by Mr. William Helliwell, of the Highland Creek, that twenty-two barrels at a time could be placed in it, in two rows of eleven each, laid lengthwise side by side, still leaving room for Tyler and an assistant to navigate the boat.

The large piece of meadow land on the east side of the river, above Tyler's abode, enclosed by a curve which the stream makes towards the west, has a certain interest attached to it from the fact that therein was reproduced, for the first time in these parts, that peculiarly pleasant English scene, a hop-garden. Under the care of Mr. James Case, familiar with the hop in Sussex, this graceful and useful plant was here for several seasons to be seen passing through the successive stages of its scientific cultivation; in early spring sprouting from the surface of the rich black vegetable mould; then trained gradually over, and at length clothing richly the poles or groups of poles set at regular distances throughout the enclosure; overtopping these supports; by and by loading them heavily with a plentiful crop of swaying clusters; and then finally, when in a sufficiently mature state, prostrated, props and all, upon the ground, and stripped of their fragrant burden, the real object of all the pains taken. From this field many valuable pockets of hops were gathered; and the quality of the plant was pronounced to be good. Mr. Case afterwards engaged extensively in the same occupation in the neighbourhood of Newmarket.

About the dry, sandy table-land that overlooked the river on each side in this neighbourhood, the burrows of the fox, often with little families within, were plentifully to be met with. The marmot too, popularly known as the woodchuck, was to be seen on sunny days sitting up upon its haunches at holes in the hill-side. We could at this moment point out the ancient home of a particular animal of this species, whose ways we used to note with some curiosity. Here were to be found racoons also; but these, like the numerous squirrels, black, red, flying and striped, were visible only in the height of summer, when the maize and the nuts began to ripen. At that period also, bears, he-bears and she-bears, accompanied by their cubs, were not unfamiliar objects, wherever the blackberry and raspberry grew. In the forest, moreover, hereabout, a rustle in the underbrush, and something white seen dancing up and down in the distance like the plume of a mounted knight,, might at any moment indicate that a group of deer had caught sight of one of the dreaded human race, and, with tails uplifted, had bounded incontinently away.

Pines of a great height and thickness crowded the tops of these hills. The paths of hurricanes could be traced over extensive tracts by the fallen trunks of trees of this species, their huge

bulks lying one over the other in a titanic confusion worthy of a sketch by Doré in illustration of Dante; their heads all in one direction. Their upturned roots, vast mats of woody ramifications and earth, presented sometimes a perpendicular wall of a great height. Occasionally one of these upright masses, originating in the habit of the pine to send out a wide-spread but shallow rootage, would unexpectedly fall back into its original place, when, in the clearing of the land, the bole of the tree to which it appertained came to be gashed through. In this case it would sometimes happen that a considerable portion of the trunk would appear again in a perpendicular position. As its top would of course show that human hands had been at work there, the question would be propounded to the new comer as to how the axe could have reached to such a height. The suppositions usually encouraged in him were, either that the snow must have been wonderfully deep when that particular tree was felled, or else that some one of the very early settlers must have been a man of exceptional stature.—Among the lofty pines, here and there, one more exposed than the rest would be seen, with a piece of the thickness of a strong fence-rail stripped out of its side, from its extreme apex to its very root, spirally, like the groove of a rifle-bore. It in this manner showed that at some moment it had been the swift conductor down into the earth of the contents of a passing electric cloud. One tree of the pine species we remember, that had been severed in the midst by lightning, so suddenly, that the upper half had descended with perfect perpendicularity, and such force, that it planted itself upright in the earth by the side of the trunk from which it had been smitten. Nor may we omit from our remembered phenomena of the pine forests hereabout, the bee-trees. Now and then a huge pine would fall, or be intentionally cut down, which would exhibit in cavernous recesses at a great distance from what had been its root end, the accumulated combs of, it might be, a half-century; those of them that were of recent construction, filled with honey.—A solitary survivor of the forest of towering pines that, at the period to which we are adverting, covered the hills on both sides of the Don, is still to be seen towards the northern limit of the Moss Park property. This particular tree has been gracefully commemorated in the columns of a local paper:

O! tell to me, thou old pine tree,
O! tell to me thy tale,
For long has thou the thunder braved,
And long withstood the gale;
The last of all thy hardy race,
Thy tale now tell to me,
For sure I am, it must be strange,
Thou lonely forest tree.

Yes, strange it is, this bending trunk,
So withered now and grey,
Stood once amid the forest trees
Which long have passed away:
They fell in strength and beauty,
Nor have they left a trace,
Save my old trunk and withered limbs
To show their former place.

Countless and lofty once we stood;
Beneath our ample shade
His forest home of boughs and bark
The hardy red man made.
Child of the forest, here he roamed,
Nor spoke nor thought of fear,
As he trapped the beaver in his dam,
And chased the bounding deer.

No gallant ship with spreadng sail
Then ploughed those waters blue,
Nor craft had old Ontario then,
But the Indians' birch canoe;
No path was through the forest,
Save that the red man trod;
Here, by your home, was his dwelling place,
And the temple of his God.

Now where the busy city stands,
Hard by that graceful spire,
The proud Ojibeway smoked his pipe
Beside his camping fire.
And there, where those marts of commerce are
Extending east and west,
Amid the rushes in the marsh,
The wild fowl had its nest.

But the pale face came, our ranks were thinn'd,
And the loftiest were brought low,
And the forest faded far and wide,
Beneath his sturdy blow;
And the steamer on the quiet lake,
Then ploughed its way of foam,
And the red man fled from the scene of strife
To find a wilder home.

And many who in childhood's days
Around my trunk have played,
Are resting like the Indian now
Beneath the cedar's shade;
And I, like one bereft of friends,
With winter whitened o'er,
But wait the hour that I must fall,
As others fell before.

And still what changes wait thee,
When at no distant day,
The ships of far off nations,
Shall anchor in your bay;
When one vast chain of railroad,
Stretching from shore to shore,
Shall bear the wealth of India,
And land it at your door.

A short distance above the hop ground of which we have spoken, the Don passed immediately underneath a high sandy bluff. Where, after a long reach in its downward course, it first im-

pinged against the steep cliff, it was very deep. Here was the only point in its route, so far as we recall, where the epithet was applicable which Milton gives to its English namesake, when he speaks of—

"Utmost Tweed, or Ouse, or *gulphy* Don."

This very noticeable portion of the river was known as the "Big Bend." (We may observe here that in retaining its English name, the Don has lost the appellation assigned to it by the French and the aborigines. The Grand River, on the contrary, has retained its French name, notwithstanding its English official designation, which was the Ouse. The Rouge, too, has kept its French name. It was the Nen; and the Indians, it is said, styled it The River of Easy Entrance (Katabokokonk). The Thames, however, has wholly dropped its French title, LaTranche. We may subjoin that the Humber was anciently called by some, St. John's River, from a trader named St. John; and by some, Toronto River.)—Towards the summit of the high bluff just mentioned, the holes made by the sand-martins were numerous. Hereabout we have met with the snapping turtle. This creature has not the power of withdrawing itself wholly within a shell. A part of its protection consists in the loud threatening snap of its strong horny jaws, armed in front with a beak-like hook bent downwards. What the creature lays hold of, it will not let go. Let it grasp the end of a stout stick, and the sportsman may sling it over his shoulder, and so carry it home with him. When allowed to reach its natural term of life, it probably attains a very great age. We remember a specimen captured near the spot at which we are pausing, which, from its vast size, and the rough, lichen-covered condition of its shell, must have been extremely old. We also once found near here a numerous deposit of this animal's eggs; all white and spherical, of the diameter of about an inch, and covered with a tough, parchment-like skin. The ordinary lesser tortoises of the marsh were of course plentiful along the Don: their young, frequently to be met with creeping about, were curious and ever-interesting little objects. Snakes too there were about here, of several kinds: one, often very large and dangerous-looking, the copper-head, of a greenish brown colour, and covered with oblong and rather loose scales. The striped garter-snake, of all sizes, was very common. Though reported to be harmless, it always indulged, when interfered with, in the menacing action and savage attempts to strike, of the most venomous of its genus. Then there was the beautiful grass-green snake; and in large numbers, the black water-snake. In the rank herbage along the river's edge, the terrified piping of a pursued frog was often heard. It recurs to us, as we write, that once, on the banks of the Humber, we saw a bird actually in the grasp of a large garter-snake—just held by the foot. As the little creature fluttered violently in the air, the head of the reptile was swayed rapidly to and fro. All the small birds in the vicinity had gathered together in a state of noisy excitement; and many spirited dashes were made by several of them at the common foe. No great injury having been as yet inflicted, we were enabled to effect a happy rescue.

From the high sandy cliff, to which our attention has been drawn, it was possible to look down into the waters of the river; and on a sunny day, it afforded no small amusement to watch the habits, not only of the creatures just named, but of the fish also, visible below in the stream; the simple sunfish, for example, swimming about in shoals (or *schools*, as the term used to be); and the pike, crafty as a fox, lurking in solitude, ready to dart on his unwary prey with the swiftness and precision of an arrow shot from the bow.

XXIV.—FROM THE BIG BEND TO CASTLE FRANK BROOK.

Above the "Big Bend," on the west side, was "Rock Point." At the water's edge hereabout was a slight outcrop of shaly rock, where crayfish were numerous, and black bass. The adjoining marshy land was covered with a dense thicket, in which wild gooseberry bushes and wild black-currant bushes were noticeable. The flats along here were a favorite haunt of woodcock at the proper season of the year: the peculiar set of little twitters uttered by them when descending from their flight, and the very different, deep-toned note, the signal of their having alighted, were both very familiar sounds in the dusk of the evening.—A little further on was "the Island." The channel between it and the "mainland" on the north side, was completely choked up with logs and large branches, brought down by the freshets. It was itself surrounded by a high fringe or hedge of the usual brush that lined the river-side all along, matted together and clambered over, almost everywhere, by the wild grape-vine. In the waters at its northern end, wild rice grew plentifully, and the beautiful sweet-scented white water-lily or lotus.

This minute bit of insulated land possessed, to the boyish fancy, great capabilities. Within its convenient circuit, what phantasies and dreams might not be realized? A Juan Fernandez, a Barataria, a New Atlantis.—At the present moment we find that what was once our charmed isle has now become *terra firma*, wholly amalgamated with the mainland. Silt has hidden from view the tangled lodgments of the floods. A carpet of pleasant herbage has overspread the silt. The border-strip of shrubbery and grape-vine, which so delightfully walled it round, has been improved, root and branch, out of being.

Near the Island, on the left side, a rivulet, of which more immediately, pouring down through a deep, narrow ravine, entered the Don. On the right, just at this point, the objectionable marshes began to disappear, and the whole bottom of the vale was early converted into handsome meadows. Scattered about were grand elms and butter-nut trees, fine basswood and button-wood trees, with small groves of the Canadian willow, which pleasantly resembles, in habit, the olive tree of the south of Europe. Along the flats, remains of Indian encampments were often met with; tusks of bears and other animals; with fragments of coarse pottery, streaked or furrowed rudely over, for ornament. And all along the valley, calcareous masses, richly impregnated with iron, were found, detached, from time to time, as was supposed, from certain places in the hill-sides.—At the long-ago epoch when the land went up, the waters came down with a concentrated rush from several directions into the valley just here, from some accidental cause, carving out in their course, in the enormous deposit of the drift, a number of deep and rapidly descending channels, converging all upon this point.—The drainage of a large extent of acreage to the eastward, also at that period, found here for a time its way into the Don, as may be seen by a neighbouring gorge, and the deep and wide, but now *dry* water-course leading to it, known, where the "Mill road" crosses it, as the "Big Hollow." Bare and desolate, at that remote era, must have been the appearance of these earth-banks and ridges and flats, as also those in the vicinity of all our rivers: for many a long year they must have resembled the surroundings of some great tidal river, to which the sea, after ebbing, had failed to return.

One result of the ancient down-rush of waters, just about here, was that on both sides of the river there were to be observed several striking specimens of that long, thin, narrow kind of hill which is popularly known as a "hog's back." One on the east side afforded, along its ridge, a convenient ascent from the meadows to the table-land above, where fine views up and down the vale were obtainable, somewhat Swiss in character, including in the distance the lake, to the south. Overhanging the pathway, about half-way up, a group of white-birch trees is remembered by the token that, on their stems, a number of young men and maidens of the neighbourhood had, in sentimental mood, after the manner of the Corydons and Amaryllises of classic times, incised their names.

The west side of the river, as well as the east, of which we have been more especially speaking, presented here also a collection of convergent "hogsbacks" and deeply channelled water-courses. One of the latter still conducted down a living stream to the Don. This was the rivulet already noticed as entering just above the Island. It bore the graceful name of "Castle Frank Brook,"

XXV.—CASTLE FRANK.

Castle Frank was a rustic chateau or summer-house, built by Governor Simcoe in the midst of the woods, on the brow of a steep and lofty bank, which overlooks the vale of the Don, a short distance to the north of where we have been lingering. The construction of this edifice was a mere *divertissement* while engaged in the grand work of planting in a field literally and entirely new, the institutions of civilization. All the way from the site of the town of York to the front of this building, a narrow carriage-road and convenient bridle-path had been cut out by the soldiers, and carefully graded. Remains of this ancient engineering achievement are still to be traced along the base of the hill below the Necropolis and elsewhere. The brook—Castle Frank Brook—a little way from where it enters the Don, was spanned by a wooden bridge. Advantage being taken of a narrow ridge, that opportunely had its commencing point close by on the north side, the roadway here began the ascent of the adjoining height. It then ran slantingly up the hill-side, along a cutting that is still to be seen. The table-land at the summit was finally gained by utilizing another narrow ridge. It then proceeded along the level at the top for some distance through a forest of lofty pines, until the chateau itself was reached.

The cleared space where the building stood was not many yards across. On each side of it, the ground precipitously descended, on the one hand to the Don, on the other to the bottom of the ravine where flowed the brook. Notwithstanding the elevation of the position, the view was circumscribed, hill-side and table-land being alike covered with trees of the finest growth.

Castle Frank itself was an edifice of considerable dimensions, of an oblong shape; its walls were composed of a number of rather small, carefully hewn logs, of short lengths. The whole wore the hue that unpainted timber, exposed to the weather, speedily assumes. At the gable end, in the direction of the roadway from the nascent capital, was the principal entrance, over which a rather imposing portico was formed by the projection of the whole roof, supported by four upright columns, reaching the whole height of the building, and consisting of the stems of four good-sized, well-matched pines, with their deeply-chapped, corrugated bark unremoved. The doors and shutters to the windows were all of double thickness, made of stout plank, running up and down on one side, and crosswise on the other, and thickly studded over with the heads of stout nails. From the middle of the building rose a solitary, massive chimney-stack.

We can picture to ourselves the cavalcade that was wont, from time to time, to be seen in the summers and autumns of 1894-'5-'6, wending its way leisurely to the romantically situated chateau of Castle Frank, along the reaches and windings, the descents and ascents of the forest road, expressly cut out through the primitive woods as a means of access to it.

First, mounted on willing and well-favored horse, as we will suppose, there would be General Simcoe himself—a soldierly personage, in the full vigour of life, advanced but little beyond his fortieth year, of thoughtful and stern, yet benevolent aspect—as shown by the medallion in marble on his monument in the cathedral at Exeter—revolving ever in his mind schemes for the development and defence of the new Society which he was engaged in founding; a man "just, active, enlightened, brave, frank," as the French Duke de Liancourt described him in 1795; "possessing the confidence of the country, of the troops, and of all those who were joined with him in the administration of public affairs." "No hillock catches his eye," the same observant writer remarks, "without exciting in his mind the idea of a fort which might be constructed on the spot, associating with the construction of this fort the plan of operations for a campaign; especially of that which should lead him to Philadelphia," *i. e.*, to recover, by force of arms, to the allegiance of England, the Colonies recently revolted.

By the side of the soldier and statesman Governor, also on horseback, would be his gifted consort, small in person, "handsome and amiable," as the French Duke again speaks; "fulfilling," as he continues to say, "all the duties of the mother and wife with the most scrupulous exactness; carrying the latter so far," DeLiancourt observes, "as to be of great assistance to her husband by her talent for drawing, the practice of which, in relation to maps and plans, enabled her to be extremely useful to the Governor," while her skill and facility and taste in a wider application of that talent were attested, the French traveller might have added, by numerous sketch-books and portfolios of views of Canadian scenery in its primitive condition, taken by her hand, to be treasured up carefully and reverently by her immediate descendants, but unfortunately not accessible generally to Canadian students. This memorable lady—memorable for her eminent Christian goodness, as well as for her artistic skill and taste, and superior intellectual endowments—survived to the late period of 1850. Her maiden name is preserved among us by the designation borne by two of our townships, East and West "Gwillim"-bury. Her father, at the time one of the aides-de-camp to General Wolfe, was killed at the taking of Quebec.

Conspicuous in the group would likewise be a young daughter and son, the latter about five years of age and bearing the name of Francis. The chateau of which we have just given an account was theoretically the private property of this child, and took its name from him, although the appellation, by accident as we suppose, is identical, in sound at all events, with that of a certain "Castel-franc" near Rochelle, which figures in the history of the Huguenots.

The Iroquois at Niagara had given the Governor a title, which in their language signified, "One whose door is always open." They had, moreover, in Council declared his son a chief, and had named him "Tioga;" and to humour them in return, as Liancourt informs us, the child was occasionally attired in Indian costume. For most men it is well that the future is veiled from them. It happened eventually that a warrior's fate befell the young chieftain Tioga. The little spirited lad who had been seen at one time moving about before the assembled

Iroquois at Niagara, under a certaint restrain probably, from the unwonted garb of embroidered deerskin, in which on such occasions, he would be arrayed; and at another time clambering up and down the steep hill-sides at Castle Frank with the restless energy of a free English boy, was at last after the lapse some seventeen years, seen a mangled corse, one in that ghastly pile of "English dead," which in 1812, closed up the breach at Badajos.

Riding with the Governor, out to his rustic lodge, would be seen also his attached secretary, Major Littlehales, and one or other of his faithful aides-de-camp, Lieutenant Talbot or Lieutenant Givins; with men in attendance in the dark green undress of the famous Queen's Rangers, with a sumpter pony or two, bearing packages and baskets filled with a day's provender for the whole party. A few dogs also, a black Newfoundland, a pointer, a setter, white and tan, hieing buoyantly about on the right and left, would give animation to the cavalcade as it passed sedately on its way—

"Through the green-glooming twilight of the grove."

It will be of interest to add here, the inscription on General Simcoe's monument in Exeter Cathedral:—"Sacred to the memory of John Graves Simcoe, Lieutenant-General in the Army, and Colonel of the 22nd Regiment of Foot, who died on the 25th day of October, 1806, aged 54. In whose life and character the virtues of the hero, the patriot and the Christian were so eminently conspicuous, that it may justly be said, he served his king and his country with a zeal exceeded only by his piety towards God." Above this inscription is a medallion portrait. On the right and left are figures of an Indian and a soldier of the Queen's Rangers. The remains of the General are not deposited in Exeter Cathedral, but under a mortuary chapel on the estate of his family elsewhere.

Our cavalcade to Castle Frank, as sketched above, has been challenged on the supposed ground that in 1794 there were no horses in Western Canada. Horses were no doubt at that date scarce in the region named; but some were procurable for the use of the Governor and his suite. In a "Journal to Detroit from Niagara, in 1793, by Major Littlehales," printed for the first time in the *Canadian Literary Magazine*, for May, 1833, we have it mentioned that, on the return of an exploring party, they were met at the end of the plains, near the Salt Lake Creek, by Indians, "bringing horses for the Governor and his suite." The French *habitans* about Sandwich and Detroit were in possession of horses in 1793, as well as their fellow-countrymen in Lower Canada.

After the departure of General Simcoe from Canada, Castle Frank was occasionally made the scene of an excursion or pic-nic by President Russell and his family; and a ball was now and then given there, for which the appliances as well as the guests were conveyed in boats up the Don. At one time it was temporarily occupied by Captain John Denison, of whom hereafter. About the year 1829, the building, shut up and tenantless at the time, was destroyed by fire, the mischievous handiwork of persons engaged in salmon-fishing in the Don. A depression in the dry sand just beyond the fence that bounds the Cemetery of St. James, northward, shews to this day the exact site of Castle Frank. The quantity of iron that was gathered out from this depression after this fire, was, as we remember, something extraordinary, all the window-shutters and doors, having been, as we have said, made of double planks, fastened together with an immense number of stout nails, whose heads thickly studded the surface of each in regular order.

The immediate surroundings of the spot where Castle Frank stood, fortunately continue almost in their original natural state. Although the site of the building itself is outside the bounds of the Cemetery of St. James, a large portion of the lot which at first formed the domain of the chateau, now forms a part of that spacious and picturesque enclosure. The deep glen on the west, immediately below where the house was built, and through which flows (and by the listener may be pleasantly *heard* to flow) the brook that bears its name, is to this day a scene of rare sylvan beauty. The pedestrian from the town, by a half-hour's easy walk, can here place himself in the midst of a forest solitude; and from what he sees he can form an idea of the whole surrounding region, as it was when York was first laid out. Here he can find in abundance, to this day, specimens, gigantic and minute, of the vegetation of the ancient woods. Here at the proper seasons he can still hear the blue-jay; the flute notes of the solitary wood-thrush, and at night, specially when the moon is shining bright, the whip-poor-will, hurriedly and in a high key, syllabling forth its own name.

XXVI.—ON TO THE FORD AND THE MILLS.

We now resume our ramble up the valley of the Don. Northward of the gorge, where Castle Frank Brook entered, and where so many other deep-cut ravines converge upon the present channel of the stream, the scenery becomes really good. We pass along through natural meadows, bordered on both sides by fine hills, which recede by a succession of slight plateaus, the uppermost of them clothed with lofty pines and oaks; on the slope nearest to "the flats" on the east, grew, along with the choke-cherry and may-flower, numbers of the wild apple or crab, beautiful objects when in full bloom. Hereabout also was to be found the prickly ash, a rather uncommon and graceful shrub. Immediately beyond the Castle Frank woods, where now is the property known as Drumsnab, came the estate of Capt. John Playter, the elder; and directly across on the opposite side of the river, that of his son Capt. John Playter, the younger, both immigants from Pennsylvania. When the town of York was in the occupancy of the Americans, in 1812, many of the archives of the young province of Upper Canada were conveyed for safe keeping to the houses of these gentlemen. But boats, with men and officers from the invading force, found their way up the windings of the river Don; and such papers and documents as could be found were carried away.

Just below Drumsnab, on the west side of the stream, and set down, as it were, in the midst of the valley, was, and is, a singular isolated mound of the shape of a glass shade over a French clock, know in the neighborhood as the "Sugar loaf." It was completely clothed over with moderate sized trees. When the whole valley of the Don was filled with a brimming river reaching to the summit of its now secondary banks, the top of the "Sugar loaf," which is nearly on a level with the summit of the adjacent hills, must have appeared above the face of the water as an island speck.

This picturesque and curious mound is noticed by Sir James Alexander, in the account which he gives of the neighbourhood of Toronto in his "L'Acadie, or Seven Years' Explorations in British America":—"The most picturesque spot near Toronto," says Sir James, "and within four miles of it, is Drumsnab, the residence of Mr. Cayley. The mansion is roomy and of one storey, with a broad verandah. It is seated among fields and woods, on the edge of a slope; at the bottom winds a river; opposite is a most singular conical hill, like an immense Indian tumulus for the dead; in the distance, through a vista cut judiciously through the forest, are seen the dark blue waters of Lake Ontario. The walls of the principal room are covered with scenes from Faust, drawn in fresco, with a bold and masterly hand, by the proprietor."—(Vol. i. p. 230.)

In the shadow thrown eastward by the "Sugar-loaf," there was a "Ford" in the Don, a favourite bathing-place for boys, with a clean gravelly bottom, and a current somewhat swift. That Ford was just in the line of an allowance for a concession road; which from the precipitous character of the hills on both sides, has been of late years closed by Act of Parliament, on the ground of its supposed impracticability for ever—a proceeding to be regretted; as the highway that would traverse the Don valley at the Ford would be a continuation of Bloor street in a right line; and would form a convenient means of communication between Chester and Yorkville. In the meadow on the left, just above the Ford, a little meandering brook, abounding in trout, entered the Don. Hereabouts also was, for a long while, a rustic bridge over the main river, formed by trees felled across the stream. Proceeding on our way we now in a short time approached the great colony of the Helliwells, which has already been described. The mills and manufactories inaugurated here by that enterprising family constituted quite a conspicuous village.—A visit to this cluster of buildings, in 1827, is described by Mr. W. L. Mackenzie, in his "Sketches of Canada," published in London, by Effingham Wilson, in 1833. At page 270 of that work, the writer says: "About three miles out of town, in the bottom of a deep ravine, watered by the river Don, and bounded also by beautiful and verdant flats, are situated the York Paper Mills, distillery and grist-mill of Messrs. Eastwood & Co.; also Mr. Shepard's axe-grinding machinery; and Messrs. Helliwell's large and extensive Brewery. I went out to view these improvements a few days ago, and returned much gratified with witnessing the paper-manufacture in active operation—as also the bold and pleasant scenery on the banks of the Don. The river might be made navigable with small expense up to the brewery; and if the surrounding lands were laid out in five-acre lots all the way to town, they would sell to great advantage."

CANADIAN INSTITUTE.

ANNUAL REPORT OF THE COUNCIL FOR THE YEAR 1868–69.

The Council of the Canadian Institute have the honour to present the following Report of the proceedings of the Society for the past year, from the 1st December, 1868, to 30th November, 1869.

MEMBERSHIP.

The present state of membership is as follows:—

Members at commencement of Session, 1st December, 1868..		354
" Elected during Session 1868–'69.....		12
" " provisionally by Council.....		7
Total.....		373
Deduct		
Deaths.....	9	
Withdrawn.....	9	
Left the Province.....	1	
		19
Total, 30th November, 1869.....		354
Composed of		
Honorary members.....	4	
Life members.....	28	
Corresponding members.....	5	
Ordinary members.....	317	
Total.....		354

COMMUNICATIONS.

The following list of papers, read at the ordinary meetings held during the Session, will be found to contain many valuable communications:—

5th December, 1868.—Professor D. Wilson, LL.D., "On the Petrarchan Stanza, in relation to successive eras of English Literature."

12th December, 1868.—Dr. Agnew, "Roundabout Paper."

19th December, 1868.—The Annual Report was read and adopted.

8th January, 1869.—Dr. E. M. Hodder, "On some Sphygmographic Tracings, and their relations to diseases of Heart and Large Vessels."

16th January, 1869.—Rev. Prof. W. Hincks, F.L.S., President, read his Inaugural Address.

22nd January, 1869.—Dr. J. Bovell, "Illustrative of the Growth of Tissue."

30th January, 1869.—Dr. C. B. Hall (for Dr. Scadding), "Collections and Recollections in regard to York, Upper Canada."

5th February, 1869.—The Medical Section adjourned in consequence of the Death of Dr. M. O'Dea.

12th February, 1869.—Dr. Scadding continued his "Collections and Recollections in regard to York, Upper Canada."

12*th February*, 1869.—
J. C. Hamilton read "Some interesting remarks on the early modes of Criminal Procedure and Punishment in the Home District of Upper Canada."

19*th February*, 1869.—Dr. Cumming, "On English Views of Vaccination."

5*th March*, 1869.—Dr. Oldright, "On Auscultation as applied to Obstetrical Practice."

19*th March*, 1869.—"The Meeting was resolved into a Public Meeting."

2*nd April*, 1869.—Dr. Temple, "On Carbolic Acid."

9*th April*, 1869.—Dr. Hall, in continuation, Dr. Scadding's "Collections and Recollections in regard to York, U. C."

TREASURER AND AUDITORS' REPORT.

Statement of the General Account of the Canadian Institute for the Year 1868–69, *from* 1*st December*, 1868, *to* 30*th November*, 1869.

DEBTOR.

Cash Balance last year			$352 13
" Received from Members			355 00
" for Rent			68 40
" Parliamentary Grant, year 1869			750 00
" for Interest on Loan of $3,100, to 30th Nov., 1868	$186 00		
" for Interest on Loan of $3,100, from 30th November, 1868, to 7th January, 1869	19 86		
		205 86	
" for sale of Journals — Old Series	1 00		
" for sale of Journals — New "	14 00		
		15 00	
Due by Members			1715 75
" Journals — Old Series	114 25		
" Journals — New "	43 25		
		157 50	
			$3,619 14

CREDITOR.

Cash paid for Journal, Vol. XII., Nos. 1, 2			$465 11
" for Library and Museum			67 39
" Account of Institute:			
Salary	$336 00		
Insurance	102 25		
Wood	60 75		
Printing	25 25		
Drains	76 25		
Postage, $2.77; oil, $2.05; brooms, 55c.; chimney sweeping, 60c.; candles, 90c.; filing, 25c.; lime, 10c.; lock, 30c.; nails, 10c.; snow shovel, 30c.; stationery, $4.02; window brush, 75c.; board for fence, 30c.; advertising, $1.67; glazing, 45c.	15 11		
		615 61	
Estimated Balance			2471 03
			$3,619 14

The TREASURER *in Account with the* CANADIAN INSTITUTE, *for the Year* 1868–69, *from the 1st December*, 1868, *to 30th November*, 1869.

DEBTOR.

Cash Balance last year			$352 18
" Received from Members			355 00
" for Rent			68 40
" Parliamentary Grant, year 1869			750 00
" for Interest on Loan of $3,100, to 30th Nov., 1868	$186 00		
" for Interest on Loan of $3,100, from 1st December, 1868, to 7th January, 1869	19 86		
			205 86
" for sale of Journals, { Old Series	1 00		
" for sale of Journals, { New "	14 00		
			15 00
Securities			3100 00
			$4,845 89

CREDITOR.

Cash paid for Journal, Vol. XII., Nos. 1 and 2			$465 11
" for Library and Museum			67 89
" on Account of Institute:			
Salary	$336 00		
Insurance	102 85		
Wood	60 75		
Printing	25 25		
Drains	76 25		
Postage, $2.77; oil, $2.05; brooms, 55c.; chimney sweeping, 60c.; candles, 90c.; filing, 25c.; lime, 10c.; lock, 30c.; nails, 10c.; snow shovel, 30c.; stationery, $4.02; window brush, 75c.; board for fence, 30c.; advertising, $1.67; glazing, 45c.	15 11		
			615 61
Securities			3100 00
Cash in Hand			597 78
			$4,845 89

SAMUEL SPREULL, *Treasurer.*

The undersigned, Auditors, have compared the Vouchers for the above items with the Cash Book, and find them to agree. The Balance in hands of Treasurer at date above given is five hundred and ninety-seven dollars and seventy-eight cents.

TORONTO, December 1st, 1869.

W. J. MACDONELL,
GEORGE MURRAY, } *Auditors.*

LIBRARIAN'S REPORT.

The Librarian reports as follows:—

The increase in the Library of the Institute by donations during the current year has been one hundred and ninety-three volumes, besides pamphlets to the number of three hundred and eleven. A detailed list of titles and donors, made by the assistant Secretary, is now laid on the table.

It will be seen that the Institute is indebted to Mr. Lawrence Heyden, its late Recording Secretary, for a large proportion of the volumes and pamphlets presented, one hundred and eighty-six of the former, and two hundred and sixty-three of the latter being gifts of his.

Among Mr. Heyden's collection will be found several publications, of especial value, as relating to the early history of Canada and other portions of this Continent. Also a fine old copy of Lysons' Environs of London, in five volumes quarto, date 1796, bound in calf; and an interesting Lavater, in three volumes octavo, London, 1797.

From the Hon. Mr. Broadhead, at Washington, was received a royal octavo volume of 899 pages, on "The Geology of New Jersey," with an Atlas of eight large plates: also the Report of J. Ross Browne, on the "Mineral Resources of the States and Territories west of the Rocky Mountains." This is a royal octavo volume of 674 pages. Its date is 1868.

The Boston Natural History Society has sent a copy of Harris's "Entomological Correspondence," a royal octavo volume of 375 pages, with fine coloured plates.

Dr. Paine's work entitled "Institutes of Medicine," New York, 1870, royal octavo, bound, has been forwarded to us by the author.

The usual number of valuable periodicals put forth by the Scientific Societies of Great Britain, the Continent of Europe, and the United States, and sent in exchange for the *Canadian Journal*, have been duly received throughout the year.

December 16th, 1869.

NOTE RELATIVE TO METEOROLOGICAL REPORTS FOR JAN. 1869.

In consequence of the progressive change in the distribution of temperature through the year, it was found necessary to compute a new table of normal temperatures as standards of reference. The normals, as derived from the ten years 1859–1868, have been employed from January 1869 inclusive. In the reports for January and February 1869, in the *Canadian Journal*, a breach of continuity occurs in the differences of the daily means from their normal standards, which was occasioned by using the old instead of the New Table for January.

The differences should be as follows:

Differences of the actual Mean Daily Temperatures from the Normal Daily Means for January 1869.	Date.	Differences fr. Normal.
	1	+ 9·88
	2	+ 8·37
	3	Sunday.
	4	+ 17·63
	5	+ 11·56
	6	+ 11·27
	7	+ 18·05
	8	+ 13·53
	9	+ 17·63
	10	Sunday.
	11	+ 7·08
	12	+ 2·88
	13	+ 7·70
	14	+ 11·50
	15	+ 9·23
	16	+ 2·53
	17	Sunday.
	18	− 1·75
	19	− 5·58
	20	− 8·90
	21	− 3·58
	22	− 9·58
	23	+ 10·88
	24	Sunday.
	25	− 15·48
	26	− 5·55
	27	− 8·93
	28	+ 10·95
	29	+ 19·38
	30	+ 9·08
	31	Sunday.
	Month	+ 6·08

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—JULY, 1869.

Latitude—43° 39′4 *North*. *Longitude*—5h. 17m. 33s. *West*. *Elevation above Lake Ontario*, 108 *feet*.

Day.	Barom. at temp. of 32°				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M	2 P.M.	10 P.M	M'E'N		6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'.	M'N		
1	29.725	29.686	29.624	29.6740	54.7	64.1	56.9	58.27	— 8.05	.304	.406	.431	.382	71	67	93	79	N	S S W	S W	S 27 W	1.2	3.6	1.4	2.22	2.48	...	...
2	.592	.500	.395	.4798	55.5	71.5	67.4	65.58	— 0.92	.381	.591	.575	.513	86	77	86	81	Calm.	S O W	S b W	S 20 W	0.4	7.2	5.0	3.46	3.56	0.140	...
3	.281	.277	.287	.2820	63.7	80.7	76.4	73.78	+ 7.08	.570	.702	.679	.656	96	66	75	79	S	W	N W b W	S 84 W	1.0	8.4	9.0	3.70	5.30	.020	...
4	.437	.543	—	—	64.5	74.9	—	—	—	.507	.448	—	—	83	51	—	—	W	W b N	N W b W	N 49 W	9.0	13.6	7.7	8.75	9.97	...	...
5	.852	.864	.862	.8607	55.8	65.2	54.7	59.48	— 7.58	.335	.361	.380	.339	74	58	89	68	N	S S W	Calm.	S 27 W	8.8	9.2	0.0	1.67	3.56	...	...
6	.905	.870	.828	.8650	54.0	68.8	60.5	61.33	— 5.92	.346	.372	.3 5	.362	82	53	62	67	N E b N	S b W	E b N	S 46 E	0.8	4.6	2.5	1.30	2.38	...	...
7	.766	.659	.597	.6590	56.5	66.3	63.7	62.97	— 4.40	.378	.456	.491	.459	83	70	83	80	N E b E	E b S	Calm.	S 37 E	4.6	8.6	0.0	2.65	3.56	0.400	...
8	.592	.516	.419	.5117	64.3	72.0	64.8	67.13	— 0.40	.576	.613	.569	.589	95	78	92	89	S W b W	S W b W	S E b S	S 39 W	1.4	10.0	4.0	2.87	3.94	0.140	...
9	.433	.450	.488	.4543	64.1	73.8	62.7	67.42	— 0.23	.538	.590	.504	.556	90	70	88	80	N W	S S W	Calm.	S 74 W	7.2	7.5	0.0	1.40	3.47	...	...
10	.500	.388	.195	.3452	62.3	74.2	69.5	69.63	+ 1.85	.497	.570	.561	.552	88	67	77	76	Calm.	S b W	S W b S	S 28 W	0.0	13.5	11.8	9.12	9.97	0.240	...
11	.276	.504	—	—	72.4	69.2	—	—	—	.579	.457	—	—	73	64	—	—	S W b W	W N W	N b W	N 73 W	6.0	20.0	4.1	9.97	10.97	...	...
12	.689	.695	.710	.6938	56.2	68.8	62.3	62.92	— 5.08	.360	.423	.336	.370	80	60	60	65	W	S S W	N b E	N 51 W	3.8	6.0	7.2	1.03	5.83	...	...
13	.687	.678	.656	.6728	60.9	65.5	59.8	62.42	— 5.67	.429	.417	.392	.412	80	66	76	73	N E b N	E	S E b E	N 76 E	3.8	15.4	6.5	7.22	7.50	...	...
14	.645	.586	.501	.5685	61.9	65.9	64.1	64.15	— 4.03	.491	.540	.565	.503	73	85	94	84	N E b E	E b N	N b E	N 78 E	5.2	8.0	1.6	4.85	4.90	0.055	...
15	.484	.485	.438	.4698	64.1	80.7	71.0	72.77	+ 4.57	.568	.710	.608	.629	94	68	79	80	S E	S S W	W S W	S 2 E	0.2	4.6	1.4	1.82	2.67	1.600	...
16	.403	.442	.508	.4558	69.1	80.7	70.6	74.20	+ 5.92	.637	.591	.561	.604	90	57	75	73	S W	W N W	N W	S 77 W	2.2	15.0	5.0	7.08	8.07	...	...
17	.574	.599	.560	.5790	61.6	72.4	68.1	68.45	— 0.10	.428	.538	.446	.480	78	67	65	69	N W b W	S S W	N	S 83 W	1.4	8.6	6.4	1.20	4.48	...	...
18	.568	.532	—	—	64.5	74.2	—	—	—	.467	.485	—	—	76	57	—	—	N N W	S S W	N N W	N 35 W	2.5	5.8	7.0	1.56	5.07	...	...
19	.557	.592	.560	.5758	61.6	69.2	60.5	64.18	— 4.23	.393	.417	.395	.401	71	58	75	67	N	S E b S	Calm.	S 82 E	1.0	5.8	0.0	1.98	2.42	...	...
20	.470	.352	.285	.3550	58.0	67.4	63.0	63.52	— 4.93	.394	.547	.526	.510	82	81	91	86	N E	E b S	S W b S	S 59 E	2.5	9.4	2.5	3.05	4.65	0.420	...
21	.300	.416	.508	.4390	61.6	62.3	55.8	59.67	— 8.80	.441	.383	.344	.383	81	68	77	75	S W b W	W	W	S 83 W	3.2	16.0	8.5	9.21	9.65	0.040	...
22	.633	.651	.674	.6563	56.5	68.8	57.6	61.63	— 6.82	.356	.462	.331	.384	78	65	69	69	W N W	S W b S	Calm.	S 61 W	9.0	6.0	0.0	1.93	2.72	...	...
23	.662	.648	.630	.6382	56.5	67.4	59.4	61.10	— 7.35	.413	.480	.473	.453	90	71	93	84	Calm	S W b S	Calm.	S 31 W	0.0	4.8	0.0	4.12	4.16	0.060	...
24	.539	.551	.548	.5480	63.4	65.6	62.7	64.13	— 4.32	.521	.531	.530	.531	89	84	93	89	S W b W	S W	Calm.	S 44 W	3.5	3.5	0.0	2.61	2.63	...	...
25	.553	.528	—	—	63.4	77.5	—	—	—	.393	.710	—	—	67	75	—	—	Calm	S W b W	S S W	S 27 W	0.0	10.2	0.5	4.39	4.88	...	...
26	.439	.369	.431	.4165	64.1	72.4	62.7	67.17	— 1.20	.538	.594	.492	.554	90	75	86	83	S	S W	S W	S 34 W	4.0	5.0	3.6	3.69	3.90	0.005	...
27	.457	.467	.501	.4703	61.2	74.6	61.2	66.38	— 1.98	.512	.550	.434	.513	95	63	80	79	W b S	S b W	Calm.	S 42 W	1.6	7.0	0.0	3.98	4.47	0.210	...
28	.453	.491	.413	.4480	61.6	61.6	61.6	62.20	— 6.10	.468	.493	.513	.502	85	90	85	88	S W b W	S S W	N N W	S 80 W	2.8	7.2	8.2	3.52	6.50	1.280	...
29	.448	.530	.631	.5427	56.9	63.4	52.9	58.52	— 9.72	.431	.382	.338	.384	94	65	84	79	N W b W	W b N	W N W	N 73 W	4.0	15.8	2.6	8.18	8.26	...	...
30	.677	.715	.799	.7382	53.6	71.3	60.9	62.37	— 5.83	.319	.351	.355	.344	78	46	67	63	W N W	N W	N W	N 62 W	7.0	5.0	2.4	3.93	4.15	...	...
31	.911	.914	.960	.9250	52.9	64.1	58.3	59.47	— 8.68	.206	.313	.350	.323	74	53	72	66	Calm.	S S E	Calm.	S 23 E	0.0	2.6	0.0	0.92	1.22	...	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JULY, 1869.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....29.960 at 10 p m. on 31st } Monthly range=
Lowest Barometer .....29.193 at mid. on 10th } 0.757 inches.

Self-registering Ther.
- Maximum Temperature .....84°9 on 15th } Monthly range=
- Minimum Temperature.....49°8 on 6th } 35°.1
- Mean Maximum Temperature .....73°07 } Mean daily range=
- Mean Minimum Temperature .....57°61 } 15°.46
- Greatest daily range.....24°1 from a.m. to p.m. of 14th.
- Least daily range ..... 5°0 from a m. to p.m. of 21st.

Warmest Day.....10th...Mean Temperature.....74°20 } Difference=16°.93
Coldest Day..... 1st...Mean Temperature.....58°27 }

Maximum Radiation. Solar .....98°5 on 16th } Monthly range=
Terrestrial.....40°2 on 6th } 58°.3

Aurora observed on 1st night, viz.:—3rd.

Possible to see Aurora on 14 nights; impossible on 17 nights.

Raining on 13 days; depth 4.610 inches; duration of fall 30.1 hours.

Mean of Cloudiness—0.67.

Resultant Direction S. 67° W.; Resultant Velocity 2.01.

Mean Velocity 5.07 miles per hour.

Maximum Velocity 27.8 miles, from 9 to 10 a.m. of 11th.

Most Windy day 11th; Mean Velocity 10.97 miles per hour.
Least Windy day 31st; Mean Velocity 1.22 miles per hour.

Most Windy hour 1 p m.; Mean Velocity 8.72 miles per hour.
Least Windy hour 5 a.m.; Mean Velocity 2.67 miles per hour.

8th, Heavy Thunder Storm; 14th, Thunder Storm; 15th, Heavy Thunder Storm, 1.600 inches of rain fell in about 2 hours.
20th, Thunder Storm. Heavy rain. Rainbow during evening.
22rd, Thunder Storm. 26th, Thunder Storm 27th, Thunder Storm.
28th, Heavy Thunder Storm. 1.280 inches of rain fell.

It will be observed from the Comparative Table that this has been the coldest July, except 1843 and 1860.

COMPARATIVE TABLE FOR JULY.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velo'y	Mean Velocity
	°	°	°	°	°					°		
1841	65.0	— 2.4	89.0	39.9	49.1	10	8.150	...	...	...	...	0.27 lbs
1842	64.7	— 2·7	91.0	42.5	48.5	4	3.050	...	...	...	...	0.33
1843	64.5	— 2.9	86.8	38.7	48.1	8	4.605	...	...	...	...	0.44
1844	66.0	— 1.4	86.6	40.1	46.5	12	4.815	...	...	...	...	0.19
1845	66.2	— 1.2	96.0	45.7	49.3	7	2.195	...	...	...	...	0.30
1846	68.0	+ 0.6	94.6	44.5	50.1	9	2.895	...	...	...	...	0.29
1847	68.0	+ 0.6	87.0	43.2	43.8	8	3.355	...	...	...	...	0.19
1848	65.5	— 1.9	82.2	44.1	38.1	10	1.890	...	...	N 14 W	0.18	4.94mls
1849	68.4	+ 1.0	88.6	45.2	43.4	4	3.415	...	...	S 5 W	0.75	3.52
1850	68.9	+ 1.5	86.2	51.6	34.6	12	5.270	...	...	N 81 E	0.59	4.56
1851	65.0	— 2.4	82.7	46.5	36.2	12	3.625	...	...	N 60 W	0.88	4.13
1852	66.8	— 0.6	90.1	48.5	41.6	8	4.025	...	...	N 43 W	0.93	3.33
1853	65.6	— 1.8	91.3	41.6	49.7	10	0.915	...	...	S 58 E	0.24	3.69
1854	72.5	+ 5.1	98.0	42.5	55.5	9	4.805	...	...	S 49 W	0.37	4.03
1855	67.9	+ 0.5	92.8	49.2	43.6	13	3.245	...	...	S 19 W	0.73	6.47
1856	69.9	+ 2.5	96.6	49.5	47.1	8	1.120	...	...	N 79 W	1.57	5.84
1857	67.8	+ 0.4	86.6	47.0	39.6	15	3.475	...	...	S 68 E	0.81	4.74
1858	67.9	+ 0.5	85.0	52.0	34.0	13	3.072	...	...	N 15 E	1.13	5.76
1859	66.9	— 0.5	88.0	44.7	43.3	12	2.611	...	...	N 56 W	1.48	5.81
1860	63.9	— 3.5	88.0	43.8	44.2	13	4.336	...	...	N 60 W	2.15	7.29
1861	65.4	— 2.0	84.5	47.0	37.5	16	2.635	...	...	N 74 W	1.48	4.66
1862	66.7	— 0.7	95.5	48.2	47.3	15	5.344	...	...	S 89 W	1.42	5.80
1863	67.6	+ 0.2	83.5	48.0	35.5	15	3.408	...	...	N 18 W	0.40	3.89
1864	69.7	+ 2.3	90.2	49.0	41.2	8	1.332	...	...	N 61 W	2.23	6.00
1865	66.0	— 2.4	85.0	45.8	37.2	11	2.470	...	...	N 86 W	2.28	5.34
1866	70.4	+ 3.0	94.0	47.8	46.2	16	5.390	...	...	S 79 W	0.94	4.17
1867	68.2	+ 0.8	94.0	48.2	45.8	12	1.965	...	...	N 48 W	1.40	5.45
1868	75.8	+ 8.4	93.4	59.0	34.4	5	0.510	...	...	S 87 E	0.72	4.66
1869	64.5	— 2.9	84.9	49.8	35.1	13	4.610	...	...	S 67 W	2.	5.07
Resu'ts to 1868.	67.4	...	89.44	46.21	43.23	10.38	3.351	...	...	N 68 W	0.68	4.96
Excess for '69.	2.92	...	— 4.54	+ 3.59	+ 8.13	+ 2.62	+ 1.259	...	...	...	...	+ 0.11

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETIC OBSERVATORY, TORONTO, ONTARIO,—AUGUST, 1869.

Latitude—43° 39′4 *North*. *Longitude*—5*h*. 17*m*. 33*s*. *West*. *Elevation above Lake Ontario*, 108 *feet*.

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Result't.	Velocity of Wind.					Rain in inches.	Snow in inches.
	6. A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	M'N		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M	10 P.M.	Result'.	M'N.		
					°	°	°	°																				
1	29.960	29.909	—	—	56.9	72.4	—	—	—	.431	.549	—	—	93	69	—	—	N b E	S S E	Calm.	S 45 E	0.4	0.5	0.0	1.27	1.35	...	...
2	.727	.538	29.459	29.5620	60.1	69.9	64.8	65.65	— 2.37	.476	.555	.582	.550	92	76	95	87	Calm.	S W b S	S W b W	S 51 W	0.0	14.8	1.6	6.69	8.28	.610	...
3	.546	.521	.531	.5307	58.0	76.0	65.2	66.93	— 0.98	.416	.406	.484	.432	86	45	78	67	W N W	N W b W	W b N	N 65 W	9.5	14.6	6.8	6.57	6.76	.025	...
4	.500	.436	.470	.4650	56.2	55.1	55.5	55.65	—12.20	.371	.398	.426	.402	82	91	97	90	W N W	S E	N E	N 5 E	1.2	2.6	1.6	1.76	2.22	.155	...
5	.528	.632	.757	.6523	54.7	63.4	54.0	57.83	- 9.92	.348	.299	.303	.313	81	51	72	66	N	N b W	N	N 6 W	12.0	12.6	10.0	8.29	8.42	...	...
6	.833	.825	.873	.8540	49.0	64.1	54.7	56.95	—10.74	.256	.275	.283	.283	74	46	66	62	N N W	N N W	N b E	N 18 W	2.8	9.4	7.0	7.79	7.80	...	...
7	.921	.907	.870	.8982	50.0	63.0	51.8	56.45	—11.10	.253	.337	.321	.311	69	59	83	68	N	S b W	N N W	N 40 W	7.0	11.2	0.4	2.55	5.15	...	...
8	.903	.818	—	—	51.1	67.7	—	—	—	.289	.374	—	—	76	55	—	—	Calm.	S	S W b W	S 26 W	0.0	7.0	1.7	3.04	3.37	...	...
9	.767	.737	.672	.7190	53.6	72.4	59.0	63.18	— 4.13	.351	.508	.380	.428	85	63	76	74	Calm.	S S W	Calm.	S 33 W	0.0	7.8	0.0	3.50	3.56	...	...
10	.656	.602	.605	.6142	58.7	74.2	66.3	66.63	— 0.53	.442	.554	.548	.504	90	65	85	78	W S W	S S W	Calm.	S 35 W	2.4	9.0	0.0	2.91	3.10	.155	...
11	.609	.657	.727	.6718	64.8	77.1	65.9	69.33	+ 2.23	.595	.517	.500	.536	97	55	78	76	Calm.	N E b N	N b W	N 11 W	0.0	8.5	7.6	5.58	6.02	...	...
12	.771	.736	.646	.7162	59.4	70.0	61.2	64.67	— 2.23	.375	.540	.410	.462	74	74	76	75	N N E	E b S	Calm.	N 77 E	5.0	7.0	0.0	2.84	3.92	.471	...
13	.621	.663	.753	.6800	63.7	74.9	59.0	66.27	— 0.48	.570	.652	.323	.519	96	76	65	79	N W b W	S S W	N b W	N 28 W	3.3	6.0	6.5	3.84	6.13	...	...
14	.817	.735	.530	.6630	56.5	63.7	59.4	61.38	— 5.20	.335	.376	.410	.396	78	63	81	73	N E	E b N	E N E	S 88 E	2.8	8.6	8.6	6.84	7.56	.700	...
15	.338	.391	—	—	63.4	68.8	—	—	—	.548	.424	—	—	94	60	—	—	Calm.	W	W b N	N 83 W	0.0	21.5	2.5	9.11	10.29	...	...
16	.558	.607	.590	.5823	58.0	65.9	60.9	61.62	— 4.72	.410	.474	.491	.450	86	74	92	82	N W b N	S S E	Calm.	S 40 E	1.8	2.6	0.0	0.71	1.52	...	...
17	.661	.703	.719	.6982	60.1	67.7	63.0	64.03	— 2.03	.476	.464	.475	.471	92	68	82	79	N W	S b W	N	N 82 W	1.0	7.5	7.0	1.13	2.80	...	...
18	.718	.666	.645	.6747	57.2	72.0	67.4	66.15	+ 0.23	.404	.613	.494	.504	86	78	75	78	Calm.	S S E	S W	S 14 W	0.0	7.0	1.0	2.00	2.37	...	...
19	.645	.563	.417	.5298	62.3	75.3	69.5	69.70	+ 4.02	.549	.709	.617	.635	98	81	86	88	W b S	S E	S S W	S 26 W	0.5	5.5	5.0	4.34	5.27	...	...
20	.415	.438	.551	.4768	75.7	86.8	68.1	75.18	+ 9.68	.703	.822	.566	.672	79	64	82	76	S W b W	W b N	N b E	N 29 W	2.8	9.0	11.0	4.09	7.28	inap.	...
21	.578	.613	.676	.6228	64.1	66.6	63.4	64.52	— 0.77	.524	.465	.508	.493	87	71	86	81	N E b N	E b N	Calm.	N 60 E	3.4	8.6	0.0	3.76	4.35	1.150	...
22	.717	.772	—	—	63.0	69.2	—	—	—	.487	.405	—	—	84	56	—	—	Calm.	S S E	N N E	S 81 E	0.0	5.4	3.4	0.97	2.36	...	...
23	.870	.860	.554	.8593	59.1	71.3	61.2	64.77	— 0.08	.390	.442	.434	.435	78	57	80	72	Calm.	E b S	N N E	N 68 E	0.0	5.2	2.5	2.30	2.97	...	...
24	.852	.773	.670	.7627	60.5	71.0	65.2	66.70	+ 2.10	.419	.611	.604	.553	80	80	97	84	N b E	E S E	Calm.	S 72 E	1.2	1.5	0.0	1.32	1.71	...	...
25	.594	.545	.643	.5943	67.0	77.8	60.9	68.85	+ 4.50	.594	.659	.389	.540	90	69	73	75	Calm.	N W	Calm.	N 46 W	0.0	19.8	0.0	7.13	8.50	.030	...
26	.763	.800	.774	.7800	60.5	67.7	56.5	61.63	— 2.47	.382	.412	.378	.387	73	60	83	71	N E b N	S b W	N W b N	N 56 W	2.8	4.6	0.8	0.21	2.50	...	...
27	.774	.691	.579	.6768	52.6	65.2	63.7	62.00	— 1.83	.342	.421	.491	.432	86	67	83	77	N b E	E	E N E	N 80 E	3.5	6.2	2.0	2.98	3.22	.517	...
28	.507	.394	.488	.4575	64.1	75.3	64.8	68.55	+ 4.98	.591	.723	.585	.613	99	82	90	87	Calm.	Calm.	Calm.	N 68 W	0.0	0.0	0.0	2.82	3.16	.460	...
29	.562	.591	—	—	57.6	71.7	—	—	—	.376	.411	—	—	79	53	—	—	N W b W	W b N	W	N 56 W	12.8	12.8	2.4	10.36	10.52	...	...
30	.697	.699	.742	.7152	54.7	64.5	55.8	58.75	— 4.32	.348	.354	.333	.337	81	57	74	68	N W b N	N W b N	N W	N 33 W	8.0	18.0	3.0	9.53	9.69	...	...
31	.835	.826	.865	.8447	46.4	57.2	48.2	51.22	—11.58	.249	.228	.255	.239	79	48	75	65	N N W	N N W	N W b N	N 23 W	1.6	10.0	0.5	6.77	6.87	...	...

METEOROLOGICAL REGISTER.

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR AUGUST, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....29.960 at 6 a.m. on 1st. } Monthly range—
Lowest Barometer.....29.338 at 6 a.m. on 15th. } 0.622.

Self-registering Ther.
- Maximum Temperature .....89°0 on 20th. } Monthly range—
- Minimum Temperature .....43°5 on 6th. } 45°5.
- Mean Maximum Temperature .....72°14. } Mean daily range—
- Mean Minimum Temperature .....55°62. } 16°52.
- Greatest daily range.....24°0 from a.m. to p.m. of 8th.
- Least daily range ..... 6°2 from a.m. to p.m. of 4th.

Warmest day.....20th...Mean Temperature.....75°18. } Difference—23°96.
Coldest day .....31st ...Mean Temperature.....51°22. }

Maximum Radiation. { Solar .....106°5 on 20th. } Monthly range—
{ Terrestrial ... . 34°0 on 6th & 31st. } 72°5.

Aurora observed on 4 nights, viz.: 5th, 6th, 10th, and 24th.

Possible to see Aurora on 24 nights; impossible on 7 nights.

Raining on 11 days; depth 4.273 inches; duration of fall 23.0 hours.

Mean of Cloudiness—0.53.

Resultant Direction N. 42° W.; Resultant Velocity 1.98.

Mean Velocity 5.13 miles per hour.

Maximum Velocity 26.0 miles, from 11 a.m. to noon of 15th.

Most Windy day 29th; Mean Velocity 10.52 miles per hour.

Least Windy day 1st; Mean Velocity 1.35 miles per hour.

Most Windy hour 2 p.m; Mean Velocity 8.75 miles per hour.

Least Windy hour 4 a.m.; Mean Velocity 2.84 miles per hour.

4th. Thunder storm during morning. 11th. Solar halo.
12th. Thunder storm during night. 14th. Solar halo.
14th. Sheet lightning at midnight. 17th. Lunar halo.
19th. Distant thunder. 20th. Distant thunder; solar halo and parhelia distinct.
27th. Violent thunder storm during night, and at 6.30 a.m. of 28th.
Hoar frost night of 31st.

COMPARATIVE TABLE FOR AUGUST.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Vel'y	Mean Velocity.
	°	°	°	°	°					°		
1841	64.4	— 1.7	84.8	45.7	39.1	9	9.617	...	...	...	...	0.19 lbs
1842	65.7	— 0.4	81.8	43.9	37.9	6	2.500	...	...	...	...	0.30
1843	66.4	+ 0.3	83.1	44.0	39.1	4	4.850	...	...	...	...	0.12
1844	64.3	— 1.8	86.8	43.5	43.3	17	imper.	...	...	...	...	0.16
1845	67.9	+ 1.8	84.8	41.5	43.3	9	1.725	...	...	...	...	0.19
1846	68.4	+ 2.3	86.4	49.5	36.9	9	1.770	...	...	...	...	0.17
1847	65.1	— 1.0	82.6	44.6	38.0	10	2.140	...	...	...	...	0.19
1848	69.2	+ 3.1	87.0	48.7	38.3	8	0·855	...	...	S 21 E	0.98	4.55mls
1849	66.3	+ 0.2	79.0	49.0	30.0	10	4.970	...	...	N 71 W	0.60	8.76
1850	66.8	+ 0.7	85.0	41.0	44.0	13	4.355	...	...	N 15 E	0.35	4.46
1851	63.6	— 2.5	79.8	42.0	37.8	10	1.360	...	...	N 63 W	0.40	4.63
1852	65.9	— 0.2	81.2	45.8	35.4	9	2.695	...	...	N 70 E	0.56	3.30
1853	68.6	+ 2.5	94.9	42.5	52.4	11	2·575	...	...	S 36 E	0.30	4.26
1854	68.0	+ 1.9	99.2	45.6	53.6	5	0.455	...	...	N 64 W	1.76	4.60
1855	64.1	— 2.0	83.5	40.0	43.5	7	1.455	...	...	N 63 W	1.04	6.97
1856	63.6	— 2.5	82.7	41.5	41.2	12	1.680	...	...	N 50 W	2.88	7.03
1857	65.3	— 0.8	88.2	46.0	42.2	13	5.265	...	...	N 77 W	1.51	6.36
1858	67.6	+ 1.5	84.0	44.0	40.0	11	3.890	...	...	N 69 W	1.57	6.50
1859	66.6	+ 0.5	82.2	45.8	36.4	11	3.900	...	...	N 36 W	1.62	5.96
1860	64.5	— 1.6	87.0	46.8	40.2	14	3.405	...	...	N 70 W	1.83	5.80
1861	65.5	— 0.6	85.2	47.0	38.2	15	2.953	...	...	N 8 E	0.46	4.21
1862	67.6	+ 1.5	89.5	42.8	46.7	15	3.483	...	...	N 78 W	1.67	5.96
1863	66.6	+ 0.5	88.0	42.4	45.6	12	2.208	...	...	S 61 W	1.80	4.89
1864	68.6	+ 2.5	94.0	47.0	47.0	16	5.060	...	...	N 70 W	1.38	4.75
1865	65.2	— 0.9	87.8	44.4	43.4	8	1.990	...	...	N 60 W	1.55	5.07
1866	60.8	— 5.3	77.0	42.4	34.6	14	4.457	...	...	N 59 W	2.58	5.16
1867	68.1	+ 2.0	95.2	42.2	53.0	10	2.440	...	...	N 76 W	1.25	4.52
1868	67.2	+ 1.1	84.4	46.8	37.6	13	1.562	...	...	S 58 W	1.01	6.15
1869	63.6	— 2.5	89.0	43.5	45.5	11	4.273	...	...	N 42 W	1.98	5.13
Results to 1868.	66.09	...	85.90	44.51	41.39	10.79	2.970	...	...	N 66 W	1.04	5.19
Excess for '69	2.45	...	+ 3.10	— 1.01	+ 4.11	+ 0.21	+ 1.303	...	...	...	...	0.06

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—SEPTEMBER, 1869.

Latitude—43° 39′4 *North.* *Longitude*—5*h.* 17*m.* 33*s.* *West.* *Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M	ME'N.		6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M	10 P.M		6 A.M.	2 P.M	10 P.M.	Res'l-tant.	MEAN		
					°	°	°	°																				
1	29.928	29.907	29.943	29.9263	46.1	61.9	52.2	54.30	— 8.25	.225	.238	.275	.256	72	43	70	62	N N W	N N W	N	N 9 W	4.8	5.0	6.6	6.81	6.98	...	...
2	30.025	30.020	.947	.9987	50.6	63.0	49.7	55.38	— 6.87	.304	.362	.278	.313	84	63	77	71	N b E	S b E	Calm.	S 40 E	5.8	5.5	0.0	1.42	2.29	...	...
3	29.903	29.841	.789	.8370	47.5	67.0	60.5	58.95	— 3.03	.283	.422	.456	.391	86	63	86	78	Calm.	S S E	W b S	S 5 W	0.0	4.4	1.2	2.38	2.55	...	...
4	.776	.666	.654	.6955	53.3	72.0	64.1	63.13	+ 2.05	.366	.556	.499	.485	90	70	83	82	Calm.	S b W	S W	S 14 W	0.0	9.2	1.0	3.62	3.72	...	...
5	.690	.596	—	—	56.2	74.6	—	—	—	.360	.507	—	—	80	59	—	—	E	S b W	S S W	S 18 W	1.2	12.8	1.8	5.20	5.33	...	...
6	.596	.591	.614	.6057	62.3	75.5	64.5	67.93	+ 6.88	.522	.567	.546	.540	93	64	90	80	Calm.	S S W	S S W	S 9 W	0.0	9.2	0.5	4.41	4.79	...	...
7	.555	.437	.416	.4643	65.6	65.6	59.0	63.15	+ 2.43	.585	.585	.439	.535	92	92	88	91	E b S	N b W	N N W	N 14 W	2.8	6.6	12.5	7.18	9.48	2.350	...
8	.384	.381	.412	.3950	58.0	58.7	55.1	56.83	— 3.52	.452	.419	.398	.417	94	85	91	90	N N W	N b W	N W	N 22 W	9.2	12.2	13.0	11.45	12.27	.470	...
9	.525	.619	.683	.6172	53.3	56.5	53.6	54.83	— 5.15	.344	.323	.329	.328	84	71	80	76	N W b W	N W b W	N b W	N 32 W	7.0	3.0	3.8	7.02	7.38	...	...
10	.745	.728	.744	.7348	51.8	63.7	55.5	58.08	— 1.52	.832	.428	.381	.383	86	72	86	79	N	S S W	Calm.	N 7 W	5.0	5.8	0.0	0.53	2.69	...	...
11	.765	.718	.741	.7 93	49.7	71.7	63.0	62.48	+ 3.28	.278	.476	.462	.421	77	61	80	73	Calm.	S W b S	W S W	S 32 W	0.0	8.0	0.5	2.65	2.71	Inap.	...
12	.775	.822	—	—	58.0	73.5	—	—	—	.452	.578	—	—	94	70	—	—	Calm.	S	E b S	S 34 E	0.0	7.2	1.3	1.40	2.43	...	...
13	.889	.879	.857	.8807	58.0	70.6	65.9	65.12	+ 6.70	.452	.491	.527	.492	99	66	83	80	N E b E	E b S	S E	S 79 E	1.6	4.2	1.0	2.87	3.21	...	...
14	.938	.889	.849	.8882	59.0	68.8	64.8	65.05	+ 7.03	.439	.462	.489	.461	88	65	80	75	E S E	E b S	S E	S 83 E	2.2	8.8	1.0	4.11	4.82	...	...
15	.813	.697	.637	.7032	60.9	70.6	64.8	65.67	+ 8.05	.491	.491	.555	.511	92	66	90	81	E	E	Calm.	S 79 E	2.2	5.4	0.0	2.74	2.85	Inap.	...
16	.635	.619	.600	.6200	64.1	71.7	64.5	66.98	+ 9.77	.566	.574	.560	.563	94	74	92	86	Calm.	S E	Calm.	S 38 E	0.0	7.0	0.0	2.04	3.08	.410	...
17	.701	.787	.823	.7785	61.9	70.6	55.1	63.02	+ 6.23	.528	.491	.353	.446	95	66	82	78	Calm.	S S W	Calm.	S 68 W	0.0	6.2	0.0	0.67	2.28	...	...
18	.877	.867	.866	.8692	54.4	69.2	62.7	62.32	+ 5.95	.352	.551	.530	.483	82	77	93	85	N b E	E S E	N E b N	S 63 E	2.4	4.0	0.6	1.60	1.88	...	...
19	.907	.855	—	—	57.6	77.8	—	—	—	.458	.690	—	—	96	72	—	—	Calm	S b W	W S W	S 40 W	0.0	7.0	1.6	2.11	2.33	...	...
20	.826	.746	.723	.7650	62.3	79.6	67.7	68.13	+13.18	.497	.699	.585	.569	88	68	87	81	Calm.	E S E	W N W	N 82 E	0.0	6.2	1.0	0.44	2.44	.195	...
21	.764	.807	.823	.7980	66.3	69.3	59.8	64.62	+ 9.50	.535	.365	.369	.404	83	51	72	67	N W b N	N W b N	N b W	N 23 W	5.6	9.8	8.0	6.85	7.30	...	...
22	.831	.841	.877	.8537	58.0	69.2	58.3	62.08	+ 7.40	.405	.497	.448	.454	84	70	92	82	N N E	S S E	Calm.	S 86 E	3.0	5.2	0.0	1.15	2.16	...	...
23	.947	.920	.884	.9108	58.3	68.1	60.5	62.80	+ 8.53	.448	.511	.434	.471	92	75	82	83	Calm.	E	N N E	N 61 E	0.0	6.8	4.0	3.47	3.98	...	...
24	.867	.807	.767	.8097	60.1	73.5	65.2	66.63	+12.80	.501	.651	.590	.586	96	79	95	90	N E b N	S E	E N E	S 51 E	2.2	3.8	2.6	2.19	3.15	...	...
25	.741	.618	.569	.6320	66.3	68.1	58.3	64.53	+11.12	.618	.594	.436	.548	95	87	90	89	S b W	N W b N	N N W	N 53 W	2.2	9.8	10.8	4.51	7.57	.540	...
26	.519	.554	—	—	54.7	54.4	—	—	—	.380	.277	—	—	89	65	—	—	N W b W	N W b N	N W b N	N 30 W	12.2	21.6	7.3	12.02	12.05	.062	...
27	.726	.734	.817	.7640	35.6	48.6	39.2	41.08	+10.62	.186	.211	.190	.193	89	61	79	73	N N W	N W	W b N	N 46 W	10.3	13.5	5.2	8.12	8.51	...	...
28	.896	.844	.815	.8517	36.0	55.8	52.7	49.47	+ 2.72	.189	.228	.288	.245	89	50	72	70	W N W	W S W	S W b W	S 65 W	4.8	8.0	6.5	6.31	6.49	...	...
29	.879	.874	.885	.8647	49.0	65.5	49.3	54.90	+ 3.15	.297	.367	.303	.314	85	58	86	73	W S W	S W b S	Calm.	S 43 W	2.8	13.5	0.0	5.34	5.65	...	...
30	.898	.847	.828	.8592	48.2	67.0	55.1	57.73	+ 6.35	.317	.396	.364	.364	94	59	84	77	Calm	S W b S	W S W	S 40 W	0.0	12.0	2.4	4.65	4.96	...	...
M	29.7859	29.7571	29.7524	29.7639	55.23	66.99	58.50	60.67	+ 3.42	.404	.460	.426	.430	88	68	84	79	.....	.....	.....	.....	2.91	8.06	3.14	.....	4.89	4.027	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR SEPTEMBER, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....30.045 at 8 a.m. on 2nd. } Monthly range=
Lowest Barometer.....29.369 at 4 p.m. on 8th. } 0.676 inches.

Self-registering Ther.:
- Maximum temperature.....81°0 on 20th } Monthly range=
- Minimum temperature.....34°4 on 28th. } 46°6
- Mean maximum temperature.....69°35 } Mean daily range=
- Mean minimum temperature.....53°85 } 15°50
- Greatest daily range.....24°2 from a.m. to p.m. of 11th.
- Least daily range.....4°0 from a.m. to p.m. of 8th.

Warmest day.....20th; mean temperature.....68°73 } Difference=26°75.
Coldest day.....27th; mean temperature.....41°98 }

Maximum { Solar.....94°0 on 20th. } Monthly range=
Radiation { Terrestrial.....23°2 on 28th. } 70°8.

Aurora observed on 9 nights, viz.:—2nd, 3rd, 5th, 9th, 13th. 14th, 27th, 29th, and 30th.

Possible to see Aurora on 21 nights; impossible on 9 nights.

Raining on 8 days: depth, 4.027 inches: duration of fall, 47.9 hours.

Mean of cloudiness=0.47.

Resultant direction, N. 53° W.; resultant velocity, 1.16.

Mean velocity, 4.89 miles per hour.

Maximum velocity, 26.0 miles, from 1 to 2 p.m. of 26th.

Most windy day, 8th; mean velocity, 12.27 miles per hour.

Least windy day, 18th; mean velocity, 1.88 miles per hour.

Most windy hour, 1 p.m.; mean velocity, 8.85 miles per hour.

Least windy hour, 5 a.m.; mean velocity, 2.54 miles per hour.

1st. Hoar frost.

7th Heavy rain storm.

16th. Thunder storm. 20th. Heavy thunder storm. 20th. Rainbow.

25th. Thunder storm. 28th. Hoar frost.

30th Solar halo.

Dew recorded on 20 occasions, some of which were very heavy.

Fog recorded on 6 occasions during month.

COMPARATIVE TABLE FOR SEPTEMBER.

YEAR	TEMPERATURE. Mean.	Excess above Average	Maximum	Minimum.	Range.	RAIN. No of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1841	61.3	+ 3.4	80.2	34.2	46.0	9	3.340	...	...	...	...	0.26 lbs.
1842	55.7	— 2.2	83.8	27.9	55.9	12	6.160	...	...	...	...	0.45
1843	59.1	+ 1.2	89.0	32.2	56.8	10	9.760	...	...	...	...	0.57
1844	58.6	+ 0.7	91.8	28.2	53.6	4	impr	...	...	...	...	0.26
1845	56.0	— 1.9	79.6	34.0	45.6	16	6.245	...	..	...	...	0.34
1846	63.6	+ 5.7	84.3	37.3	47.0	11	4.595	...	...	...	...	0.33
1847	55.6	— 2.3	74.5	35.0	39.5	15	6.665	...	...	...	...	0.33
1848	54.2	— 3.7	80.4	28.1	52.3	11	3.115	...	...	N 71 W	2.38	5.81 miles.
1849	58.2	+ 0.3	80.1	32.7	47.4	9	1.480	...	...	N 75 W	0.69	4.23
1850	56.5	— 1.4	76.0	29.5	46.5	11	1.735	...	...	S 65 W	1.02	4.78
1851	60.0	+ 2.1	86.3	32.0	54.3	9	2.665	...	...	N 14 E	1.03	5.45
1852	57.5	— 0.4	81.8	35.8	46.0	10	3.680	...	...	N 77 W	0.53	4.60
1853	58.8	+ 0.9	85.5	33.9	51.6	12	5.140	...	...	N	1.00	4.33
1854	61.0	+ 3.1	93.6	35.8	57.8	14	5.375	...	...	N 22 W	1.33	4.04
1855	59.5	+ 1.6	82.6	33.0	49.6	12	5.585	...	...	N 20 E	1.29	7.61
1856	57.1	— 0.8	78.4	35.0	43.4	13	4.105	...	...	S 79 W	1.98	6.53
1857	58.6	+ 0.7	82.0	34.1	47.9	11	2.640	...	...	N 68 W	1.61	5.55
1858	59.1	+ 1.2	81.4	35.6	45.8	8	0.735	...	...	S 74 W	1.53	5.69
1859	56.2	— 2.7	75.4	35.7	39.7	15	3.525	...	...	N 44 W	1.60	6.36
1860	55.3	— 2.6	75.8	28.7	47.1	14	1.959	...	...	N 71 W	2.63	5.79
1861	59.1	+ 1.2	78.8	37.1	41.7	17	3.607	...	...	N 71 W	1.39	4.81
1862	59.6	+ 1.7	79.4	39.0	40.4	9	2.344	...	...	N 59 W	1.07	5.11
1863	56.9	— 2.0	80.0	31.4	48.6	8	1.235	...	...	N 16 W	0.92	6.46
1864	56.4	— 1.5	78.0	37.8	35.2	11	2.508	...	...	N 38 W	1.89	7.06
1865	64.5	+ 6.6	90.5	42.0	48.5	12	2.450	...	...	S 56 E	0.47	4.12
1866	55.2	— 2.7	80.0	34.4	45.6	15	5.657	...	...	N 33 W	1.45	4.63
1867	57.9	0.0	87.0	31.8	55.2	9	1.226	...	...	N 37 W	1.48	5.43
1868	56.6	— 1.3	75.5	36.0	39.5	16	4.239	...	...	N 74 W	0.88	6.68
1869	60.7	+ 2.8	81.0	34.4	46.6	8	4 027	...	...	N 53 W	1.16	4.89
Results to 1868.	57.93	... ...	81.31	33.86	47.45	11.28	3.682	...	...	N 55 W	1.08	5.48
Exc. for 1869.	+2.74	.....	—0.31	+0.54	—0.85	—3.28	+0.345	...	...	...	...	0.59

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—OCTOBER, 1869.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17m. 33s. *West.* *Elevation above Lake Ontario*, 108 *feet.*

Day.	Barom at temp of 32°. A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 PM	ME'N.	Excess of Mean above Normal.	Tension of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N.	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Direction of Wind. 6 A.M.	2 P.M.	10 P.M.	Resultant.	Velocity of Wind. 6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN	Rain in Inches.	Snow in Inches.
					°	°	°	°																				
1	29.844	29.758	29.664	29.7450	47.5	68.4	55.8	57.42	+ 6.48	.306	.441	.365	.372	93	64	82	79	N N W	S b W	E N E	S 68 E	1.5	2.2	2.2	1.20	2.27	...	...
2	.582	.538	.589	.5682	54.0	66.3	56.2	59.62	+ 9.08	.367	.456	. 94	.419	88	70	87	82	Calm.	S W b S	N	S 79 W	0.0	12.2	9.0	2.94	6.06	0.150	...
3	.645	.586	—	—	43.5	56.9	—	—	—	.278	.287	—	—	98	61	—	—	Calm.	S S E	N E b E	N 82 E	0.0	6.8	3.0	1.60	3.48	...	...
4	.382	.246	.367	.3308	45.4	59.0	53.3	52.76	+ 2.90	.253	.259	.230	.252	83	51	56	64	N	N N W	N W	N 27 W	7.0	15.0	16.0	12.75	13.34	...	...
5	.540	.610	.698	.9213	47.2	54.7	39.9	47.16	— 2.37	.290	.304	.198	.263	89	71	80	80	N W b N	N W	N W b W	N 41 W	13.2	18.0	9.5	11.06	11.22	...	...
6	.730	.728	.701	.7193	34.5	54.0	42.8	44.66	— 4.48	.173	.241	.258	.224	86	57	94	78	N W b W	S b E	Calm.	S 17 W	6.2	8.6	0.0	1.75	4.17	...	...
7	.796	.750	.768	.7733	41.9	60.9	47.6	50.80	+ 2.02	.244	.355	.306	.311	91	67	93	84	N b E	S S E	S E b E	S 71 E	5.0	7.8	1.0	1.60	3.68	...	...
8	.814	.801	.778	.7987	45.0	65.2	55.4	56.05	+ 7.60	.258	.432	.371	.354	86	70	85	79	N N E	S E b E	N E b E	N 79 E	5.2	4.2	4.5	2.68	3.72	...	...
9	.710	.637	.495	.6133	49.3	64.1	60.1	58.52	+10.38	.323	.408	.376	.381	91	67	72	77	N E b E	E b S	S S W	S 37 E	6.6	6.2	9.8	3.29	6.86	...	...
10	.557	.554	—	—	50.6	53.3	—	—	—	.324	.250	—	—	87	61	—	—	S W b S	S S W	Calm.	S 51 W	8.8	9.0	0.0	3.85	4.08	...	...
11	.365	.300	.435	.3688	41.7	52.9	38.5	44.92	— 2.60	.218	.223	.205	.212	82	55	88	72	N b W	W b N	Calm.	W	2.6	18.5	0.0	3.80	4.59	.085	...
12	.361	.309	.413	.3685	39.6	52.7	38.1	43.46	— 3.78	.210	.168	.195	.187	87	41	85	70	W b S	W b S	N W	N 79 W	0.8	12.4	7.2	5.91	6.99	...	...
13	.421	.411	.456	.4315	31.6	49.1	32.4	38.76	— 8.28	.163	.176	.153	.173	91	50	83	75	N W b N	W b N	Calm.	N 57 W	4.2	12.2	0.0	5.81	6.88	...	...
14	.322	.144	.291	.2538	46.1	47.1	40.3	44.48	— 2.17	.263	.280	.201	.247	84	87	80	83	S E	S E b E	S W	S 9 W	10.0	6.4	4.4	5.69	7.42	.096	...
15	.340	.444	.606	.4772	41.0	47.5	41.3	42.26	— 4.07	.227	.216	.209	.213	88	66	84	79	S W	N W b W	W b N	N 69 W	5.0	15.2	3.6	6.54	7.34	...	...
16	.639	.569	.487	.5563	30.6	49.3	37.4	39.96	— 6.12	.152	.203	.170	.182	89	57	76	74	N W b W	S b W	W S W	S 32 W	4.5	8.0	1.6	2.80	3.15	...	...
17	.393	.437	—	—	42.8	51.8	—	—	—	.250	.188	—	—	90	49	—	—	S W b W	N W b W	W N W	N 67 W	1.4	19.4	9.3	10.03	10.31	...	...
18	.594	.632	.698	.6536	31.6	42.8	32.7	36.66	— 8.98	.156	.168	.142	.156	87	61	76	74	W b N	N W b W	W b N	N 71 W	3.0	12.4	3.2	6.62	6.77	...	Inapp.
19	.666	.584	.634	.6308	32.0	42.8	30.6	34.72	—10.58	.158	.143	.144	.156	87	51	85	78	W b S	W N W	W	N 83 W	2.0	16.8	2.2	7.75	7.99	inap	inapp.
20	.624	.556	.502	.5572	34.5	43.9	37.8	39.06	— 6.02	.181	.146	.165	.168	90	50	72	71	W S W	W S W	S W b W	S 54 W	5.0	12.2	9.0	7.71	7.90	...	...
21	.464	.416	.501	.4670	32.4	43.2	38.3	37.45	— 7.36	.161	.209	.171	.177	87	74	74	79	S W	S S W	W	S 32 W	2.0	12.0	1.0	6.07	6.27	...	...
22	.587	.618	.585	.5875	37.4	44.3	41.7	41.55	— 3.02	.196	.194	.246	.218	87	67	93	83	Calm.	E b S	S E	N 65 E	0.0	4.5	3.0	3.15	4.08	.114	...
23	.374	.164	.381	.3002	42.8	40.7	37.0	40.16	— 4.15	.258	.231	.176	.219	94	91	79	87	E N E	N W b N	N W b W	N 46 W	2.6	14.8	18.0	9.46	10.63	.465	...
24	.556	.644	—	—	29.8	36.7	—	—	—	.147	.155	—	—	88	71	—	—	W	W	S W	S 85 W	0.5	11.6	10.1	8.72	9.00	...	Inapp.
25	.910	.977	.956	.9628	28.4	38.1	30.9	32.46	—11.46	.142	.100	.112	.126	90	44	64	66	W	W b S	S W b W	S 80 W	13.2	10.8	1.6	7.73	7.95	...	...
26	.845	.746	.826	.8005	31.3	32.7	25.1	29.66	—13.93	.136	.128	.116	.128	77	68	86	78	S W b W	W	N W b W	N 68 W	3.6	12.0	8.5	7.10	8.20	..	2.0
27	.880	.796	.562	.7296	21.5	33.8	30.6	28.87	—14.48	.102	.168	.152	.134	88	81	89	83	N W	S	W S W	N 87 W	6.0	3.0	3.2	1.99	2.88	...	0.2
28	.308	.205	.216	.2408	31.3	34.9	35.8	34.25	— 8.85	.160	.178	.198	.181	90	87	96	91	Calm.	W b S	S W b W	S 66 W	0.0	1.6	3.5	3.06	3.12	.052	0.1
29	.254	.442	.640	.4640	36.3	34.5	31.8	33.92	— 8.95	.193	.128	.152	.158	90	64	86	81	W b N	N W b N	N b W	N 26 W	12.0	20.0	10.4	13.82	13.98	inap	...
30	.708	.838	.912	.8288	29.1	32.7	30.2	30.66	—12.25	.141	.143	.149	.128	87	76	89	75	N N W	N b W	N N W	N 16 W	9.0	11.6	6.4	8.16	8.40	...	Inapp.
31	.926	.806	—	—	28.4	36.7	—	—	—	.134	.136	—	—	86	62	—	—	Calm.	S W	S W	S 54 W	0.0	6.0	7.1	5.85	6.08	...	...
	29.5792	29.5468	29.5827	29.5708	37.85	48.29	39.96	42.29	— 4.00	.209	.234	.214	.221	88	65	82	78	.....	.....	....	.....	4.55	10.88	5.42	...	6.73	0.962	2.3

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR OCTOBER, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....29.988 at 4 p. m. on 25th. } Monthly range—
Lowest Barometer.....29.144 at 2 p. m. on 14th. } 0.844

Self-registering Ther.
- Maximum temperature .....69°8 on 1st. } Monthly range—
- Minimum temperature .....18°7 on 27th. } 51°1
- Mean maximum temperature.....50°08 } Mean daily range—
- Mean minimum temperature.....35°75 } 14°33
- Greatest daily range.....23°0 from a.m. to p.m. of 7th.
- Least daily range..... 4°0 from a.m. to p.m. of 29th.

Warmest day ..... 2nd; mean temperature 59°62 } Difference =30°75
Coldest day .....27th; mean temperature 28°87 }

Maximum { Solar..... 89°8 on 1st. } Monthly range—
Radiation { Terrestrial..... 8°0 on 27th. } 81°8

Aurora observed on 3 nights, viz.: 6th, 25th, and 31st.

Possible to see aurora on 19 nights; impossible on 21 nights.

Snowing on 7 days; depth, 2.3 inches; duration of fall, 16.4 hours.

Raining on 8 days; depth, 0.962 inches; duration of fall, 33.3 hours.

Mean of cloudiness—0.60.

Resultant direction, N. 73° W.; Resultant velocity, 3.72.

Mean velocity, 6.73 miles per hour.

Maximum velocity, 21.6 miles, from 2 to 3 p.m. of 29th.

Most windy day, 29th; mean velocity, 13.98 miles per hour.

Least windy day, 1st; mean velocity, 2.27 miles per hour.

Most windy hour, 1 p.m.; mean velocity, 11.17 miles per hour.

Least windy hour, 1 a.m.; mean velocity, 4.20 miles per hour.

12th. Thin ice. 13th. Lunar corona. 14th. Thunder storm.
18th. First snow of season. 25th. Ice half an inch thick.
27th. Very large flocks of robins.

Fog recorded on four occasions during month.
Dew recorded on four occasions during month.

It will be seen from the comparative table, that October, 1869, is the coldest October except 1841 and 1843, differing, however, only slightly from 1868.

COMPARATIVE TABLE FOR OCTOBER.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°							
1841	41.6	— 4.2	59.7	20.6	39.1	6	1.360	2	...	...	...	0.41 lbs
1842	45.1	— 0.7	68.6	27.5	41.1	8	5.175	0	...	...	...	0.35
1843	41.8	— 4.0	68.0	24.2	43.8	12	3.790	4	2.5	...	...	0.54
1844	43.3	— 2.5	71.6	15.9	55.7	7	Imp.	4	12.0	...	...	0.43
1845	46.4	+ 0.6	64.0	19.7	44.3	11	1.760	1	Inap.	...	...	0.26
1846	44.6	— 1.2	70.1	20.7	49.4	14	4.180	2	Inap.	...	...	0.44
1847	44.0	— 1.8	64.6	20.4	44.2	13	4.390	2	Inap.	...	...	0.19
1848	46.3	+ 0.5	61.8	24.5	37.3	11	1.550	0	...	N 54 W	1.24	4.60 m.
1849	45.3	— 0.5	58.9	24.2	34.7	13	5.965	1	Inap.	N 12 W	1.27	7.76
1850	45.4	— 0.4	66.7	22.4	44.3	10	2.085	0	...	N 66 W	1.10	5.80
1851	47.4	— 1.6	66.2	25.2	41.0	10	1.680	2	0.3	S 72 W	1.06	4.39
1852	48.0	+ 2.2	70.7	23.8	46.9	12	5.280	0	...	N 5 E	1.19	4.47
1853	44.4	— 1.4	64.7	23.4	41.3	10	0.875	2	Inap.	S 88 W	1.74	4.77
1854	49.5	+ 3.7	75.4	26.4	49.0	15	1.495	3	Inap.	N 45 W	1.52	4.57
1855	45.4	— 0.4	68.0	22.6	45.4	14	2.485	5	0.8	N 82 W	4.91	9.88
1856	45.3	— 0.5	71.4	23.0	48.4	10	0.875	2	0.1	N 76 W	2.16	6.07
1857	45.4	— 0.4	64.0	26.5	37.5	10	1.040	2	0.2	N 19 W	2.93	6.24
1858	48.8	+ 3.0	76.3	31.5	44.8	17	1.797	1	Inap.	N 34 W	0.36	5.96
1859	43.0	— 2.8	69.8	22.3	47.5	11	0.940	4	Inap	N 68 W	5.04	8.12
1860	47.3	+ 1.5	68.0	28.4	39.6	15	1.618	1	Inap.	N 9 W	2.00	6.93
1861	48.7	+ 1.9	71.0	29.0	42.0	15	1.993	1	Inap	N 61 W	1.06	5.96
1862	48.7	+ 2.9	76.6	26.2	50.4	19	2.684	2	0.5	N 78 W	2.89	6.53
1863	45.9	+ 0.1	66.4	30.5	35.9	16	2.522	0	...	S 71 W	0.48	6.16
1864	45.2	— 0.6	67.0	28.0	39.0	22	3.321	1	Inap.	N 00 W	3.17	6.66
1865	44.5	— 1.3	71.4	21.6	49.8	17	2.705	3	4.5	N 86 W	3.55	7.26
1866	49.1	+ 3.3	71.0	31.8	39.2	11	2.470	1	Inap	N 30 W	0.84	5.53
1867	49.9	+ 4.1	75.4	31.0	44.4	11	1.970	0	...	N 45 W	1.51	5.73
1868	42.4	— 3.4	67.6	24.0	43.6	10	1.365	2	2.0	N 89 W	1.27	7.10
1869	42.3	— 3.5	69.8	18.7	51.1	8	0.902	7	2.3	N 73 W	3.72	6.73
Results to 1868.	45.76	.....	68.39	24.83	43.56	12.52	2.473	1.76	0.88	N 57 W	1.72	6.05
Excess for 1869.	— 3.47	.....	+ 1.41	— 6.13	+ 7.54	— 4.52	— 1.511	+ 5.24	+ 1.42	...	...	+ 0.68

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—NOVEMBER, 1869.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17m. 33s. *West.* *Elevation above Lake Ontario*, 106 *feet.*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in inches.	Snow in inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 PM	MEAN.		6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M	10 P.M.	Res'l-tant.	MEAN		
					°	°	°																				
1	29.584	29.626	29.851	29.6953	34.5	47.9	37.0	39.62	— 2.55	.181	.183	.183	.188	90	54	84	78	W S W	W b N	N W	N 61 W	2.0	12.0	8.2	4.77	5.20	...	...
2	.575	.573	.528	.5587	30.9	42.8	39.9	37.93	— 3.96	.157	.252	.233	.207	90	84	95	89	Calm.	S E b E	Calm.	S 21 E	0.0	1.0	0.0	1.13	1.33	...	...
3	.792	.708	.677	.7242	36.3	53.3	39.6	42.83	+ 1.15	.193	.279	.219	.224	90	69	90	82	S S W	S W b S	Calm.	S 37 W	1.0	9.8	0.0	2.84	2.85	...	...
4	.660	.504	.265	.4550	35.6	52.6	50.4	46.50	+ 5.06	.167	.269	.351	.262	80	67	96	81	Calm.	E b S	S b W	S 13 W	0.0	4.0	4.2	4.51	5.71	.140	...
5	.156	.166	.274	.2067	43.5	42.8	36.3	40.22	— 0.93	.223	.213	.169	.197	78	77	78	79	S W	S W b W	W b S	S 66 W	13.0	14.5	12.0	13.96	14.53	.045	inap.
6	.339	.435	.473	.4235	33.4	32.0	28.4	31.15	— 9.75	.163	.158	.142	.153	85	87	90	87	W b N	N N W	N W b N	N 39 W	10.6	6.4	8.2	7.68	8.16	...	0.2
7	.462	.359	—	—	22.3	29.1	—	—	—	.114	.088	—	—	96	50	—	—	N W	N W	W N W	N 57 W	16.0	25.0	19.5	18.64	19.00	...	0.1
8	.328	.350	.461	.3862	26.6	32.2	31.3	30.03	—10.28	.135	.141	.155	.141	93	77	88	84	W N W	W N W	N W b W	N 71 W	15.5	23.5	9.4	18.44	13.58	...	0.4
9	.470	.431	.448	.453	30.9	34.2	29.8	31.58	— 8.42	.149	.153	.147	.148	86	77	88	83	W	W b S	W S W	S 84 W	7.6	7.2	8.6	8.38	8.42	...	inap.
10	.481	.518.	.579	.5278	25.5	33.4	28.8	29.30	—10.37	.118	.112	.129	.123	86	58	81	76	W	N W	W S W	N 64 W	2.8	12.6	2.0	6.98	7.29	...	0.1
11	.551	.579	.627	.5930	25.9	34.2	30.2	30.13	— 9.17	.128	.138	.120	.129	91	71	71	77	W b N	N W	W b W	N 75 W	5.0	16.2	10.5	9.90	10.48	...	...
12	.642	.630	.683	.6572	29.1	36.0	32.4	32.43	— 6.53	.130	.129	.153	.138	80	61	84	76	W b S	W	W	N 75 W	9.0	11.0	6.2	7.34	7.59	...	inap.
13	.667	.651	.694	.6775	27.3	29.1	27.0	28.22	—10.38	.139	.141	.129	.134	94	87	88	87	W b E	N E b E	N E b N	N 37 E	1.7	8.4	9.8	7.54	7.95	...	0.5
14	.710	.694	—	—	25.9	29.8	—	—	—	.129	.134	—	—	91	80	—	—	N	N b E	N W b W	N 9 W	7.2	5.0	2.4	4.82	5.06	...	...
15	.719	.712	.788	.7438	22.6	30.2	28.4	27.22	—10.62	.111	.128	.142	.130	92	76	90	87	N b W	N N E	N W b W	N 22 W	4.6	1.0	2.8	1.17	1.35	...	inap.
16	.807	.737	.366	.6033	31.3	35.2	32.7	32.90	— 4.55	.160	.155	.172	.160	90	75	92	85	Calm.	E b S	E b S	S 86 E	0.0	15.2	26.0	13.82	14.20	1.400	3.0
17	28.876	28.793	28.920	28.8672	36.3	38.7	30.9	34.73	— 2.28	.202	.162	.120	.163	94	68	69	79	E b S	S W b S	W b S	S 52 W	15.2	30.6	6.2	16.82	20.25	.045	inap.
18	29.197	29.377	29.504	29.3790	29.1	34.9	28.8	30.62	— 5.98	.141	.117	.137	.128	87	57	86	75	W b S	W b S	W S W	S 79 W	12.6	15.4	5.6	7.89	9.08	...	0.1
19	.478	.337	.344	.3725	32.7	34.5	35.3	34.83	— 1.33	.166	.163	.198	.183	88	82	96	90	E S E	E	S S E	S 70 E	8.8	7.6	7.6	6.28	8.21	.350	0.2
20	.097	.065	.402	.2063	33.1	38.5	29.8	33.52	— 2.20	.184	.182	.133	.166	98	78	80	86	N b E	W	W b N	N 69 W	3.8	15.0	11.6	11.42	11.88	inap.	0.1
21	.596	.678	—	—	26.6	30.6	—	—	—	.126	.115	—	—	87	67	—	—	N W W	W b W	W N W	N 63 W	21.0	7.8	2.4	6.19	6.45	...	inap.
22	.847	.708	.520	.6847	20.8	30.2	26.2	25.45	— 9.37	.102	.149	.131	.125	92	89	92	90	W N W	S E b S	E S E	N 85 E	2.0	12.6	15.0	7.19	11.17	...	5.5
23	.527	.657	.790	.6782	28.7	27.0	21.8	24.78	— 9.58	.113	.121	.120	.118	87	82	90	85	N	N b E	N	N 4 W	11.6	6.0	3.4	5.37	5.55	...	...
24	.991	30.065	30.104	30.0677	16.1	29.1	19.7	20.57	—13.33	.081	.096	.083	.083	90	59	78	76	N N W	Calm.	Calm.	N 3 W	1.0	0.0	0.0	0.74	0.76	...	...
25	30.098	29.792	29.915	29.9877	16.8	31.3	30.9	27.18	— 6.22	.084	.152	.157	.134	91	86	90	89	N b E	S E	E S E	S 67 E	1.0	3.8	8.2	3.31	3.59	...	...
26	29.857	.773	.698	.7738	28.4	32.0	30.6	30.27	— 2.67	.147	.151	.152	.151	95	84	89	90	N E b E	E b N	Calm.	N 43 E	1.0	2.8	0.0	0.88	2.23	inap.	...
27	.636	.538	.680	.6220	33.1	34.2	33.1	33.32	+ 0.87	.174	.152	.160	.157	92	77	84	83	S W b W	W b S	W N W	S 89 W	2.6	10.2	14.6	9.56	10.06	...	inap.
28	.734	.672	—	—	29.5	32.7	—	—	—	.150	.165	—	—	92	88	—	—	W S W	S W	W S W	S 72 W	12.5	10.7	3.7	5.35	5.67	...	...
29	.626	.489	.341	.4760	30.9	36.8	37.4	35.00	+ 3.50	.157	.176	.204	.180	90	82	91	88	Calm.	E b S	S E b E	S 62 E	0.0	8.0	2.8	4.22	4.83	.180	inap.
30	.139	.213	.195	.1972	41.4	44.6	38.5	40.80	+ 9.77	.259	.245	.216	.234	99	83	93	91	S W b W	W	N W	N 85 W	2.5	6.5	14.6	9.88	10.98	.380	...
M	29.5562	29.5349	29.5549	29.5503	29.84	36.43	32.24	32.74	— 4.50	.152	.165	.164	.160	90	75	87	84	.....	.....	.....	.....	6.39	10.31	7.35	.....	8.12	2.540	10.2

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR NOVEMBER, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....30.104 at 10 p.m. on 24th. } Monthly range=
Lowest Barometer.....28.793 at 2 p.m. on 17th. } 1.311 inches.

Self-registering Ther.
- Maximum temperature .....58°0 on 3rd. } Monthly range=
- Minimum temperature.....13°0 on 24th, 25th. } 45°0
- Mean maximum temperature.....26°89 } Mean daily range=
- Mean minimum temperature.....15°52 } 11°37
- Greatest daily range .....24°6 from a.m. to p.m. of 3rd.
- Least daily range .....2°4 from a.m. to p.m. of 6th.

Warmest day.....4th; mean temperature.....46°50 } Difference=25°93.
Coldest day.....24th; mean temperature.....20°57 }

Maximum Solar.....82°0 on 1st. } Monthly range=
Radiation Terrestrial.....3°4 on 24th. } 78°6.

Aurora observed on 1 night, viz.:—11th.

Possible to see Aurora on 7 nights; impossible on 23 nights.

Snowing on 18 days; depth 10.2 inches; duration of fall, 83.5 hours.

Raining on 9 days; depth, 2.540 inches; duration of fall, 46.0 hours.

Mean of cloudiness=0.82.

WIND.

Resultant direction, N. 78° W.; resultant velocity, 3.69.

Mean velocity, 8.12 miles per hour.

Maximum velocity, 31.2 miles, from 1 to 2 p.m. of 17th.

Most windy day, 17th; mean velocity, 20.29 miles per hour.

Least windy day, 24th; mean velocity, 0.76 miles per hour.

Most windy hour, 10 p.m.; mean velocity, 10.34 miles per hour.

Least windy hour, 6 a.m.; mean velocity, 6.21 miles per hour.

Fog recorded on 2nd, 3rd, 24th, 29th, and 30th.

Hail fell with the rain on the 5th.

Solar haloes on 7th and 26th. Lunar halo on 18th.

Very brilliant meteor 7 p.m. of 3rd.

Violent storm of wind with heavy rain and snow on 16th and 17th.

COMPARATIVE TABLE FOR NOVEMBER.

YEAR	TEMPERATURE. Mean.	Excess above Average.	Maximum	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°							
1841	35.0	— 1.9	63.8	8.5	55.3	8	2.450	5	...	...	...	0.91 lbs.
1842	33.3	— 3.6	66.8	8.1	48.7	9	5.310	10	...	...	...	1.22
1843	33.5	— 3.4	52.6	14.1	38.5	10	4.765	7	1.2	...	...	0.59
1844	34.9	— 2.0	56.0	12.1	43.9	8	impr.	4	8.0	...	...	0.48
1845	36.8	— 0.1	59.5	8.1	51.4	7	1.105	4	5.0	...	...	0.53
1846	41.3	+ 4.4	55.6	18.0	37.6	12	5.805	2	0.4	...	...	0.64
1847	38.6	+ 1.7	57.9	8.7	49.2	14	3.165	3	insp.	...	...	0.36
1848	34.5	— 2.4	49.0	15.9	33.1	9	2.020	3	1.4	N 81 W	1.81	4.81 ms.
1849	42.6	+ 5.7	56.4	26.5	29.9	10	2.815	2	1.0	N 32 W	1.55	4.78
1850	38.8	— 1.9	62.8	11.0	51.8	7	2.955	1	insp.	N 42 W	1.43	5.27
1851	32.9	— 4.0	50.2	13.8	36.4	5	3.885	6	0.7	S 50 W	1.25	4.70
1852	36.0	— 0.9	50.4	18.2	32.2	7	1.775	3	2.0	S 59 W	1.53	6.50
1853	38.7	+ 1.8	55.6	12.8	42.8	15	2.425	6	2.7	N 9 W	0.53	5.52
1854	36.8	— 0.1	55.4	13.8	41.6	13	1.115	4	1.3	W	3.44	7.54
1855	38.6	+ 1.7	59.2	15.5	43.7	8	4.590	6	3.0	N 66 W	3.18	10.81
1856	37.4	+ 0.5	56.4	18.8	37.6	10	1.375	9	9.6	S 85 W	2.98	8.75
1857	33.5	— 3.4	58.2	—3.6	61.7	14	3.235	9	6.9	S 61 W	5.45	9.25
1858	34.2	— 2.7	53.0	15.3	37.7	12	3.879	13	4.0	N 25 W	3.14	8.87
1859	38.9	+ 2.0	62.6	21.8	40.8	12	5.193	9	0.6	S 81 W	3.39	9.65
1860	37.9	+ 1.0	64.5	13.2	51.3	12	2.560	8	1.9	S 89 W	4.95	11.02
1861	37.1	+ 0.2	52.4	23.0	29.4	14	4.294	8	3.2	N 46 W	1.94	7.44
1862	35.6	— 1.3	58.0	16.2	41.8	11	2.205	11	5.3	N 45 W	3.00	6.60
1863	39.1	+ 2.2	67.0	17.8	49.2	13	3.656	6	0.1	N 88 W	1.50	7.86
1864	36.9	0.0	60.2	21.0	39.2	11	3.765	8	4.5	S 72 W	3.82	7.64
1865	38.6	+ 1.7	63.2	23.6	39.6	5	0.975	7	1.1	N 79 W	2.98	7.90
1866	38.4	+ 1.5	54.2	21.8	32.4	13	2.963	4	2.2	N 88 W	3.06	6.96
1867	36.9	0.0	60.4	9.6	50.8	8	1.835	9	0.9	N 87 W	4.02	7.76
1868	36.2	— 0.7	50.5	20.1	30.4	14	5.150	10	4.3	N 35 W	2.10	8.16
1869	32.7	— 4.2	58.0	13.0	45.0	9	2.540	18	10.2	N 78 W	3.69	8.12
Results to 1869.	36.80	.....	57.21	15.14	42.07	10.21	3.089	6.38	2.97	S 78 W	2.62	7.51
Exc. for 1869.	4.12	.....	+0.79	—2.14	+2.93	1.21	0.549	11.62	7.23	...	...	+0.61

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—DECEMBER, 1866.

Latitude—43° 39′4 *North. Longitude*—5*h.* 17*m.* 33*s. West. Elevation above Lake Ontario, 108 feet.*

Day.	Barom. at temp. of 32°				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in inches	Snow in inches
	6 A.M.	2 P.M.	10 P.M	Mean.	6 A.M.	2 P.M.	10 PM	MN'N		6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'.	M'N.		
					°	°	°	°	°																			
1	29.621	29.774	29.832	29.7585	29.1	24.4	21.5	23.98	— 6.55	.141	.110	.104	.114	87	84	90	87	W	N W	N N W	N 47 W	22.2	20.0	6.5	9.81	11.68	...	0.1
2	.752	.629	.592	.6563	19.0	24.1	21.2	21.00	— 9.05	.085	.114	.105	.099	83	86	93	87	N E B N	W B S	W B S	N 19 W	6.6	2.8	4.6	3.56	8.16	...	2.0
3	.819	.935	.867	.8763	8.5	16.5	14.7	14.37	—15.18	.054	.064	.072	.068	84	68	85	79	N	Calm.	N E	S 27 W	9.5	0.0	3.6	1.81	7.03	...	0.3
4	.577	.353	.493	.4670	29.1	34.5	34.9	32.72	+ 3.62	.141	.183	.176	.166	87	90	86	88	S B W	S W	N W	S 63 W	15.6	18.5	7.2	8.34	11.67	0.040	...
5	.615	.750	—	—	28.7	24.1	—	—	—	.145	.107	—	—	92	82	—	—	N B W	N B E	W E	N 15 E	5.4	9.0	9.6	9.12	9.42	...	...
6	.901	.910	.943	.9198	6.7	18.2	8.0	9.47	—18.70	.047	.060	.048	.051	78	75	77	76	N	N B W	N N W	N 8 W	11.2	7.6	5.8	8.10	5.34	...	...
7	.928	.887	.894	.9057	11.1	24.1	24.4	20.17	— 7.55	.065	.114	.117	.099	92	87	89	89	N B W	S S W	Calm.	N	3.0	6.0	0.0	0.28	1.53	...	0.2
8	30.004	30.080	30.131	30.0830	23.7	31.3	31.3	27.92	+ 0.63	.118	.115	.129	.116	93	65	73	76	N B W	N B W	W B N	N 48 W	3.5	1.6	5.6	1.58	3.01	...	...
9	30.126	30.031	29.986	30.0462	28.4	35.3	32.7	32.07	+ 5.20	.134	.127	.143	.135	86	61	76	75	S W	S W B S	S W B S	S 30 W	8.5	15.2	4.6	9.47	9.51	...	...
10	29.934	29.862	.892	29.9003	37.4	38.1	36.0	37.12	+10.67	.196	.204	.196	.196	87	88	93	89	S B W	S W B S	Calm.	S 37 W	8.2	7.0	0.0	5.19	5.26	Inap.	...
11	.858	.722	.574	.6977	35.2	37.4	38.8	37.06	+11.00	.200	.213	.224	.212	97	95	96	96	Calm.	S B S	E	N 86 E	0.0	7.6	8.0	6.37	6.55	.260	...
12	.512	.580	—	—	38.8	41.4	—	—	—	.220	.232	—	—	94	89	—	—	E B N	W S W	N B W	N 21 W	4.5	6.6	11.9	5.36	7.50	Inap	...
13	30.090	30.155	30.223	30.1676	24.4	22.3	21.5	22.45	— 2.62	.117	.100	.095	.103	89	83	82	85	N	N N W	N N E	N 12 E	9.6	9.4	3.8	6.92	7.07	...	...
14	30.146	30.066	29.926	30.0310	21.9	26.6	29.5	26.12	+ 1.23	.105	.126	.150	.127	89	87	92	89	N B E	N E B E	E S E	N 77 E	6.2	10.0	9.6	7.06	7.93	...	...
15	29.744	29.598	.476	29.5860	30.2	34.5	36.0	33.93	+ 9.38	.149	.192	.196	.180	89	96	93	92	E S E	E B S	E	S 86 E	4.0	10.5	15.8	11.98	12.04	1.405	...
16	.538	.408	.582	.4513	37.0	39.2	34.5	36.12	+11.88	.219	.190	.173	.187	99	79	86	88	E	S W	S W	S 37 W	14.7	11.0	12.6	7.88	11.12	.050	...
17	.695	.710	.662	.6888	32.4	34.5	31.3	32.37	+ 8.47	.169	.137	.144	.147	91	68	81	79	S W B W	S W B W	W B S	.....	6.8	5.6	0.8	....	4.27	...	...
18	.508	.344	.336	.3827	29.8	32.4	30.2	30.63	+ 7.08	.147	.146	.136	.140	88	79	80	81	N B E	N	N W B N	S 37 W	7.2	12.2	13.2	9.80	12.31	...	Insp.
19	.360	.402	—	—	25.5	26.2	—	—	—	.125	.124	—	—	91	87	—	—	W	W N W	W B S	S 79 W	11.2	18.0	12.9	12.14	12.33	...	...
20	.652	.766	.966	.8120	23.3	24.8	24.8	24.30	+ 1.23	.111	.112	.098	.104	87	84	73	79	W S W	W	W S W	S 74 W	6.2	16.0	12.2	9.99	10.15	...	Insp.
21	30.112	30.056	29.748	.9488	22.6	27.0	26.9	25.82	+ 2.97	.104	.086	.137	.113	86	58	94	80	W S W	S E	E S E	S 67 E	6.0	6.5	19.0	8.51	10.39	.360	3.5
22	29.313	28.992	.398	.2453	34.9	39.9	29.1	34.33	+11.72	.195	.198	.126	.167	96	80	78	88	E S E	S W B S	W S W	S 58 W	12.0	11.6	20.0	12.05	15.99	.070	...
23	.575	29.695	.874	.7418	26.6	25.5	21.2	24.02	+ 1.60	.107	.083	.085	.086	78	60	75	66	S W B W	W S W	W S W	S 64 W	16.2	16.0	14.6	15.08	15.11	...	Insp.
24	30.001	.885	.948	.9473	17.9	32.7	32.0	27.95	+ 5.78	.079	.120	.135	.112	80	64	74	72	W S W	S W	S W B W	S 53 W	6.6	19.2	9.8	9.20	9.39	...	...
25	29.996	.944	—	—	27.3	35.2	—	—	—	.133	.164	—	—	89	80	—	—	W S W	S W	Calm.	S 32 W	3.0	1.0	0.0	0.38	2.07	...	...
26	.898	.813	—	—	25.2	39.0	—	—	—	.121	.150	—	—	90	62	—	—	N E B N	E B N	E N E	N 51 E	4.8	4.0	2.8	4.09	4.28	.005	...
27	.697	.478	.352	.5072	36.6	35.6	37.8	36.25	+14.62	.201	.207	.226	.209	96	99	99	97	E B N	E	Calm.	N 85 E	8.8	12.2	0.0	4.54	7.87	.400	...
28	.463	.476	.524	.4917	36.0	36.0	34.5	35.38	+13.77	.196	.189	.181	.187	93	89	90	90	W B S	S W B W	W	S 67 W	4.0	8.0	6.8	5.63	5.84	...	...
29	.522	.534	.426	.4883	33.8	35.2	32.4	33.62	+12.10	.173	.164	.153	.164	89	90	83	85	W S W	W B S	S W B W	S 55 W	8.0	10.0	11.4	8.99	9.20	...	1.0
30	.229	.338	.441	.3580	32.8	36.0	33.8	34.47	+13.02	.173	.147	.153	.158	89	69	81	79	W S W	W	W B S	S 77 W	11.5	16.0	6.6	9.03	9.13	...	...
31	.617	.653	.696	.6593	34.5	35.6	30.9	33.62	+12.22	.174	.135	.149	.153	87	65	86	80	W B S	S W	E B N	S 86 E	3.8	3.7	3.4	1.11	4.44	...	...
	29.7396	29.7051	29.7224	29.7238	27.06	30.64	28.82	28.74	+ 3.88	.138	.140	.141	.138	88	78	85	83	.....	.....	.....	.....	8.01	9.77	7.83	...	8.44	2.590	7.1

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR DECEMBER, 1869.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....30.223 at 10 p.m. on 13th } Monthly range=
Lowest Barometer .....28.992 at 2 p.m. on 22d } 1.231 inches.

Self-registering Ther.
- Maximum Temperature .....45°0 on 12th } Monthly range=
- Minimum Temperature ..... 6°0 on 6th } 39°0
- Mean Maximum Temperature .....34°09 } Mean daily range=
- Mean Minimum Temperature .....24°27 } 9°82
- Greatest daily range.....23°5 from a.m. to p.m. of 4th.
- Least daily range ..... 2°5 from a.m. to p.m. of 24th.

Warmest Day.....10th...Mean Temperature.....37°12 } Difference=27°65
Coldest Day..... 6th...Mean Temperature..... 9°47 }

Maximum Radiation. Solar .....54°5 on 19th } Monthly range=
Terrestrial.....—4°8 on 7th } 59°3

No Aurora observed.

Possible to see Aurora on 9 nights; impossible on 22 nights.

Snowing on 9 days; depth 7.1 inches; duration of fall 43.2 hours.

Raining on 10 days; depth 2.590 inches; duration of fall 53.9 hours.

Mean of Cloudiness—0.83.

WIND.

Resultant Direction S. 80° W.; Resultant Velocity 2.31.

Mean Velocity 8.44 miles per hour.

Maximum Velocity 27.2 miles, from 5 to 6 p.m. of 22d.

Most Windy day 22d; Mean Velocity 15.99 miles per hour.

Least Windy day 7th; Mean Velocity 1.53 miles per hour.

Most Windy hour 2 p.m.; Mean Velocity 9.95 miles per hour.

Least Windy hour 5 a.m.; Mean Velocity 7.59 miles per hour.

Fog recorded on 11th, 12th, 22d and 27th; that on 22d was very dense.

Solar halo and parhelia on 6th.

Lunar halo on 9th. Lunar coronæ 20th and 24th.

8th. Bay frozen over and crossed by skaters; broken up in the storm of following day.

COMPARATIVE TABLE FOR DECEMBER.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velo'y	Mean Velocity
	°	°	°	°	°					°		
1841	28.7	+ 2.8	46.1	3.1	43.0	7	6.600	5	...	...	...	1.33 lbs
1842	24.7	— 1.2	40.5	3.2	37.3	3	0.880	17	...	...	...	0.61
1843	30.0	+ 4.1	48.5	3.1	45.4	6	1.040	8	8.1	...	...	0.53
1844	28.2	+ 2.3	48.5	1.6	46.9	6	Imp.	6	4.2	...	...	0.40
1845	21.1	— 4.8	39.7	— 2.4	42.1	2	Inap.	12	4.7	...	...	0.70
1846	27.5	+ 1.6	49.2	3.9	45.3	5	1.215	9	6.0	...	...	0.57
1847	30.1	+ 4.2	49.6	0.3	49.3	7	1.185	8	6.8	...	...	0.35
1848	29.1	+ 3.2	48.8	1.1	47.7	7	2.750	7	16.5	S 83 W	1.12	5.44mls
1849	26.5	+ 0.6	40.8	— 6.5	47.3	5	0.840	12	9.6	N 82 W	2.56	6.23
1850	21.7	— 4.2	48.8	— 9.0	57.8	2	0.190	18	29.5	W 44 W	2.93	7.40
1851	21.5	— 4.4	44.0	—14.8	58.8	6	1.075	15	10.7	N 82 W	4.00	7.37
1852	31.9	+ 6.0	51.0	13.2	37.8	7	3.995	10	20.1	S 69 W	1.03	6.54
1853	25.3	— 0.6	46.4	— 8.4	54.8	4	0.625	13	22.3	N 35 W	2.39	4.98
1854	21.9	— 4.0	44.8	— 7.0	51.8	5	0.590	12	17.2	N 44 W	4.30	8.56
1855	26.8	+ 0.9	47.0	— 5.2	52.2	6	1.845	10	29.5	S 88 W	5.29	11.38
1856	22.9	— 3.0	42.2	— 9.1	51.3	6	1.790	20	16.3	S 87 W	4.62	11.56
1857	31.9	+ 6.0	46.0	- 4.7	41.3	7	3.205	14	9.0	N 89 W	2.50	6.84
1858	27.4	+ 1.5	45.4	4.2	41.2	11	1.657	18	10.4	N 78 W	1.66	9.36
1859	17.9	— 8.0	54.8	— 6.0	60.8	3	1.035	23	37.4	N 53 W	4.29	10.77
1860	24.0	— 1.9	39.0	— 7.0	46.0	3	1.362	21	13.5	N 62 W	4.66	10.14
1861	31.1	+ 5.2	55.2	5.5	49.7	6	0.560	8	6.8	N 72 W	3.50	7.96
1862	28.8	+ 2.9	50.1	— 3.4	53.5	5	1.945	8	10.4	N 73 W	3.17	7.58
1863	27.0	+ 1.1	53.4	— 1.5	54.9	10	2.960	17	7.1	N 41 W	1.61	9.40
1864	24.7	— 1.2	50.4	—10.4	60.8	9	2.045	18	27.1	S 82 W	4.94	9.98
1865	27.7	+ 1.8	54.2	5.7	48.5	7	1.727	11	5.2	S 81 W	3.07	7.33
1866	25.1	— 0.8	51.0	— 5.0	56.0	7	2.790	13	15.5	S 88 W	4.98	9.91
1867	21.6	— 4.3	49.5	—12.8	62.3	7	1.048	21	13.6	S 81 W	4.82	10.32
1868	22.5	— 3.4	44.2	— 3.2	47.4	1	0.005	18	16.5	N 71 W	4.05	9.80
1869	28.7	+ 2.8	45.0	6.0	39.0	10	2.590	9	7.1	S 80 W	2.31	8.44
Result'ts to 1868.	25.93	...	47.47	—2.22	49.69	5.62	1.619	13.45	14.36	N 75 W	3.14	8.52
Excess for '69	+ 2.81	...	— 2.47	+ 8.22	— 10.69	+ 4.38	— 0.971	— 4.45	— 7.26	...	...	— 0.08

GENERAL METEOROLOGICAL REGISTER

FOR THE YEAR 1869.

GENERAL METEOROLOGICAL

MAGNETICAL OBSERVATORY.

Latitude 43° 39′ 24″ North. Longitude 5h. 57m. 33s. West. Elevation above

	JAN.	FEB.	MAR.	APR.	MAY.	JUNE.	JULY.
	°	°	°	°	°	°	°
Mean Temperature	27·71	24·96	23·06	40·05	50·77	58·42	64·48
Difference from average (29 years)	+ 4.77	+ 2·01	— 6·79	— 0·94	— 0·64	— 3·11	— 2·91
Thermic anomaly (lat. 43° 40′)	— 5·09	— 9·74	—17·04	—10·15	— 7·33	— 6·18	— 4·22
Highest temperature	45·0	46·0	46·8	72·2	74·2	81·4	84·9
Lowest temperature	— 1·0	— 1·0	— 5·4	16.6	31·4	36·4	49·8
Monthly and Annual Ranges	46·0	47·0	52·2	55·6	42·8	45·0	35·1
Mean maximum temperature	34·59	35·32	31·21	48·03	58·83	67·37	73·07
Mean minimum temperature	21·95	20·31	15.73	32·28	42·75	50·04	57·61
Mean daily range	12·64	15·01	15·48	15·75	16·08	17·33	15·46
Greatest daily range	33·6	23·0	27·6	32·4	30·4	28·6	24·1
Mean height of the Barometer	29·5662	29·5162	29·6496	29·5216	29·4829	29·5868	29·5676
Difference from average (28 years)	—·0784	—·1159	+·0507	—·0751	—·0897	+·0121	—·0314
Highest barometer	29·877	30·088	30·104	29·912	29·803	29·962	29·959
Lowest barometer	29·074	28·845	29·178	28·896	29·064	29·074	29·193
Monthly and Annual Ranges	0·803	1·243	0·926	1·016	0·749	0·906	0·757
Mean humidity of the air	80	80	78	68	67	74	77
Mean elasticity of aqueous vapour	0·127	0·114	0·105	0·173	0·258	0·367	0·470
Mean of cloudiness	0·68	0·75	0·69	0·61	0·67	0·67	0·67
Difference from average (16 years)	— ·04	+ ·03	— ·02	+ ·01	+ ·12	+ ·15	+ ·19
Resultant direction of the wind	N 72 W	N 34 W	N 52 W	N 59 W	N 20 W	N 80 W	S 67 W
" velocity of the wind	3·40	4·18	2·86	4·03	2·38	1·77	2·01
Mean velocity (miles per hour)	9·21	10.04	8·02	8·91	6·55	5·23	5·07
Difference from average (21 years)	+ 1·07	+ 1·51	— 0·78	+ 0·79	— 0·22	+ 0·08	+ 0·11
Total amount of rain	0·887	0·165	0·965	2·965	2·805	4·373	4·610
Difference from average (28-29 years)	—0·288	—0·800	—0·644	+0·566	—0·570	+1·632	+1·359
Number of days of rain	4	2	3	9	16	22	13
Total amount of snow	9·8	39·7	15·0	0·5	Inapp.	...	...
Difference from average (25 years)	— 6·16	+20·35	+ 4·85	— 2·09	— 0·08	...	...
Number of days of snow	12	19	9	6	1	...	...
Number of fair days	14	9	19	15	15	8	18
Number of Auroras observed	2	3	5	12	4	3	1
Possible to see Aurora (No. of nights)	14	11	15	22	15	11	14
Number of Thunderstorms	0	0	0	3	5	4	11

REGISTER FOR THE YEAR 1869.

TORONTO, ONTARIO.

Lake Ontario, 108 feet. Approximate elevation above the Sea, 342 feet.

Aug.	Sept.	Oct.	Nov.	Dec.	1869.	1868.	1867.	1866.	1865.	1864.	1863.
°	°	°	°	°	°	°	°	°	°	°	°
63·64	60·67	42·29	32·74	23·74	43·13	43·33	43·84	43·51	44·92	44·70	44·57
— 2·45	+ 2·74	— 3·47	— 4·12	+ 2·81	— 1·01	— ·81	— 0·30	— 0·63	+ 0·78	+ 0·56	+ 0·43
— 4·86	— 0·83	—11·51	—10·46	— 7·26	— 7·87	— 7·67	— 7·16	— 7·49	— 6·08	— 6·30	— 6.43
89·0	81·0	69·8	58·0	45·0	89·0	93·4	95·2	94·0	90·5	94·0	88·0
43·5	34·4	18·7	13·0	6·0	— 5·4	— 15·6	— 12·8	— 14·0	— 10·0	— 15·0	— 19·8
45·5	46·6	51·1	45·0	39·0	94·4	109·0	108·0	108·0	100·5	109·0	107·8
72·14	69·35	50·08	38·26	34·09	...	...	...	...	...	...	...
55·62	53·85	35·75	26·89	24·27	...	..	...	...	...	...	...
16·52	15·50	14·33	11·37	9·81	14·61	15·26	15·47	14·99	15·43	14·57	14·73
24·0	24·2	23·0	24·6	23·5	33·6	38·7	31·6	40·8	36·9	37·4	39·6
29·6654	29.7639	29·5708	29·5503	29·7238	29·5970	29·6421	29.6140	29·6216	29·6330	29·5596	29·6586
+·0424	+·1016	—·0779	—·0628	+·0704	—·0212	+·0239	—·0042	+·0034	+·0148	—·0586	+·0354
29·960	30·045	29·988	30·104	30·223	30·223	30·445	29·382	30·940	30·384	30·327	30·502
29·338	29·369	29·144	28·798	28·992	28·793	28·824	28·763	28·807	28·707	28·671	28·704
0·622	0·676	0·844	1·311	1·231	1·430	1·621	1·564	2·133	1·647	1·656	1·798
76	79	78	84	83	77	76	74	75	75	76	77
0·458	0·430	0·221	0·160	0·138	0·252	0·264	0·252	0·248	0·259	0·263	0·266
0·53	0·47	0·60	0·82	0·83	0·66	0·64	0·61	0·61	0·61	0·65	0·61
+ ·05	— ·02	— ·01	+ ·07	+ ·09	+ ·05	+ ·03	·00	·00	·00	+ ·04	·00
N 42 W	N 53 W	N 73 W	N 78 W	S 80 W	N 64 W	N 57 W	N 60 W	N 73 W	N 66 W	N 76 W	N 41 W
1·98	1·16	3·72	3.69	2·31	2·55	1·47	2·06	2·83	1·98	2·49	1·34
5·13	4·89	6·73	8·12	8·44	7.20	7·69	7·00	7·41	6·78	7·40	7·13
— 0·06	— 0·59	+ 0·68	+ 0·61	— 0·08	+ 0·26	+ 0·75	+ 0·06	+ 0·47	— 0·16	+ 0·46	+ 0·19
4·273	4·027	0·962	2·540	2·590	31·182	29·408	19·041	34·209	26·599	29·486	26·483
+1·303	+0·345	—1·511	—0·549	+0·971	+1·713	—0·061	-10·428	+4·740	—2·870	+0·017	—2·986
11	8	8	9	10	115	103	100	126	111	132	130
...	...	2·3	10·2	7·1	84·6	78·7	110·5	52·1	63·3	74·6	62·9
...	...	+ 1·42	+ 7·23	— 7·26	+18·27	+13·37	+45·17	—13·23	— 2·03	+ 9·27	— 2·43
...	...	7	18	9	81	82	84	69	68	70	74
20	22	18	9	13	180	190	181	180	201	180	181
4	9	8	1	0	47	50	43	44	55	34	44
24	21	10	7	9	182	193	202	209	201	158	182
5	3	1	0	0	32	25	23	24	17	24	24

TEMPERATURE.

	1869.	Average of 29 years.	Extremes.	
	°	°	°	°
Mean temperature of the year	43·13	44·14	46·36 in '46	42·16 in '56
Warmest month	July.	July.	July, 1868	Aug. 1860.
Mean temperature of the warmest month	64.48	67·38	75·80	64·46
Coldest month	March	January	Jan. 1857.	Feb. 1848.
Mean temperature of the coldest month	23 06	22·94	12.75	26·60
Difference between the temperatures of the warmest and coldest months	41·42	44·44	...	...
Mean of deviations of monthly means from their respective averages of 29 years, signs of deviation being disregarded	3·06	2·41	3·67 in 1843	1·33 in 1853, 1864
Months of greatest deviation without regard to sign	March	January	Jan. 1857.	...
Corresponding magnitude of deviation	6·8	3·8	10·2	...
Warmest day	Aug. 20	...	July 14, '68	July 31, '44
Mean temperature of the warmest day	75·18	78·23	84·50	72·75
Coldest day	March 4	...	Feb. 6, '55. Jan. 22, '57.	Dec. 22, '42.
Mean temperature of the coldest day	—5·12	—1·32	—14·38	9·57
Date of the highest temperature	Aug. 20	...	Aug. 24, '54	Aug. 19, '40.
Highest temperature	89.0	91·0	99·2	82·4
Date of the lowest temperature	March 5	...	Jan. 26, '59.	Jan. 2, '42.
Lowest temperature	—5·4	—12·5	—26·5	1·9
Range of the year	94·4	103·5	118·2	87.0

BAROMETER.

	1869.	Average of 28 years.	Extremes.	
Mean pressure of the year	29·5970	29 6182	29·6670 in 1849.	29·5602 in 1864.
Month of highest mean pressure	Sept.	Sept.	Jan. 1849.	June 1864.
Highest mean monthly pressure	29·7639	29·6623	29·8046	29 6525
Month of lowest mean pressure	May.	May.	Mar. 1859.	Nov. 1849.
Lowest mean monthly pressure	29·4320	29·5717	29·4143	29·5886
Date of highest pressure in the year	Dec. 13, 10 p.m.	...	Jan. 8, '66.	Dec. 13, '69.
Highest pressure	30·223	30·386	30.940	30.223
Date of lowest pressure in the year	Nov. 17, 2 p.m.	...	Mar. 19, '59.	Mar. 17, '45.
Lowest pressure	29·793	29·694	28·286	28·989
Range of the year	1·430	1·692	2·133 in 1866.	1·303 in 1845.

RELATIVE HUMIDITY.

	1869.	Average of 27 years.	Extremes.	
Mean humidity of the year	77	77	82 in 1851	73 in 1858
Month of greatest humidity	November	January	Jan. 1' 57.	Dec. 1858.
Greatest mean monthly humidity	84	83	89	81
Month of least humidity	May.	May.	Feb. 1843.	Apr. 1849.
Least mean monthly humidity	67	71	58	76

EXTENT OF SKY CLOUDED.

	1869.	Average of 16 years.	Extremes.	
Mean cloudiness of the year	0·66	0·61	0·66 in 1869	0·57 in 1856
Most cloudy month	Decem.	Novem.	...	...
Greatest monthly mean of cloudiness	0·83	0·75	0·83	0·73
Least cloudy month	Septem.	August.	...	...
Lowest monthly mean of cloudiness	0.47	0·48	0·29	0·50

WIND.

	1869.	Average of 21 years.	Extremes.	
Resultant direction	N. 64° W.	N. 61° W.	...	...
Resultant velocity in miles	2·55	1·90	...	...
Mean velocity, without regard to direction	7·20	6·94	8·55 in 1860	5·10 in 1853
Month of greatest mean velocity	February	March.	Mar. 1860.	Jan. 1848.
Greatest monthly mean velocity	10.04	8.80	12·41	5·82
Month of least mean velocity	Septem.	July.	Aug. 1852.	Sept. 1860.
Least monthly mean velocity	4·89	4·96	3·30	5·79
Day of greatest mean velocity	Feby. 4	...	Mar. 19, '59.	Dec. 2, '48.
Greatest daily mean velocity	23·39	23·22	31·16	16·30
Day of least mean velocity	June 2	...	...	...
Least daily mean velocity	0·47	...	...	...
Hour of greatest absolute velocity	March 14, n. to 1 p.m	...	Dec. 27, '61, 9-10 a.m.	Mar. 14,' 53, 11 to noon.
Greatest velocity	35.4	39·7	46·0	25·6

RAIN.

	1869.	Average of 29 years	Extremes.	
Total depth of rain in inches	31·182	29·469	43·555 in '43	19.041 in '67
Number of days in which rain fell	115	109	130 in 1861	80 in 1841
Month in which the greatest depth of rain fell	July.	Sept.	Sept. 1843.	Sept. 1848.
Greatest depth of rain in one month	4·610	3·682	9·760	3·125
Months in which the days of rain were most frequent	June.	October.	Oct. '64. June '69.	May, 1841.
Greatest number of rainy days in one month	22	13	22	11
Day in which the greatest amount of rain fell	Sept. 7.	...	Sept. 14, '43.	Sept. 14. '48.
Greatest amount of rain in one day	2·350	2 044	3·455	1 000
Hour of heaviest rain	J'ly15,m'd-n t to 1am.	...	...	...
Greatest amount of rain in one hour	0·710	...	...	...

SNOW.

	1869.	Average of 26 years.	Extremes.	
Total depth in the year in inches	84·6	65·3	110·5 in '67	33·4 in '51
Number of days in which snow fell	81	61	87 in 1859	33 in 1848
Month in which the greatest depth of snow fell	February	February	Feb. 1846.	Dec. 1851.
Greatest depth of snow in one month	39·7	18·35	46·1	10·7
Month in which the days of snow were most frequent	February	January	Jan. 1861.	Feb. 1848.
Greatest number of days of snow in one month	19	14	23	8
Days in which the greatest amount of snow fell	Feb. 28.	...	Feb. 5, '63.	Jan. 16, '57.
Greatest fall of snow in one day	9.0	8·9	16·0	5·5

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THE CANADIAN JOURNAL.

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No. LXXII.—AUGUST, 1870.

THE NATIVE TRIBES OF POLYNESIA.

Paper read before the Canadian Institute, Toronto, March 12th, 1870.

BY RICHARD LEE, F.A.S.L.

The following remarks must necessarily fall far short of any thing like a comprehensive summary of the leading features observable among the natives of Polynesia. The most that I can hope to accomplish in the brief space of a paper of this kind, is to note some of the most prominent matters that have fallen under my own observation, and to set forth some of the conclusions to which I have been led as to the future of the tribes under consideration.

Under the term Polynesia or Oceanica I would include all the islands that lie between the 100th degree of west and the 125th degree of east longitude, and between the 40th degree of south latitude and the 30th degree of north latitude. We have here a large area occupied by various tribes of the Malay race, differing much from each other, but all retaining very marked evidence of a common origin. My personal knowledge of them is chiefly limited—though not entirely—to the islands of Tasmania, Australia, New Zealand, the Figis and the Navigator groups; and it is to these, and especially to the first named, that I shall ask your attention.

I need not remind members of this society that the Tasmanians are now extinct, the last of the tribes having died in 1869. I first met with them in 1853, and when I saw them last, in 1855, they numbered only sixteen. The time had passed then for making inquiries which could be of much value from an anthropological point of view. They

were living in an artificial state, and, although retaining many of their physical characteristics—not all—a part of their language, and all the recollection of their recent history, their distinctive character had become very materially modified. For many years, the history of the Tasmanian has been a dark blot upon British civilization. In 1815, their number was estimated at 5,000, which was probably far below the truth. Five years later there were only 340. This enormous loss was not due to disease, nor to military outrages—such as have recently disgraced American arms among the Indians of the West—but solely to the murderous propensities of the early settlers. The natives were always harmless, and have not unjustly been regarded as among the lowest or least advanced members of the human family. But their weakness was no protection against the barbarities of the white population, who were in the habit of poisoning them as vermin, or shooting them as legitimate game. The daughter of an army officer—one of those who went to the colonies with a grant of land, after the close of the war with Napoleon—has described to me her recollections of the time when the neighbouring settlers, meeting in the morning at her father's house and taking an early luncheon on the lawn, would go forth into the bush to shoot blackfellows. This lady was a well-read and accomplished woman, but she never regarded this kind of recreation as any thing more than a perfectly legitimate sport, and she could tell even with enthusiasm of the interest with which the female portion of such parties used to sit over their evening meal and listen to the sportsmen's narrative of a successful excursion.

Under such circumstances it is no wonder that the tribes rapidly diminished, or that, in 1831, when the local government, ashamed of the conduct of the settlers, undertook to protect the aborigines, they were reduced to 196. Being removed to Flinder's Island, they remained there till 1847, but—and I think this important—their number was then reduced to 47, of whom 13 were men. They were then assigned to an old convict station at a beautiful spot on the shores of D'Entrecarteaux's Channel; but here again they died away so rapidly that, as I have said, in 1855 there were only 16 left.

When the late Sir John Franklin was Governor of Van Dieman's Land, he and Lady Franklin took a particular interest in the aborigines, and, on Lady Franklin's nomination, a gentleman named Milligan was appointed "Protector," with special instructions to devote himself to the preparation of a complete history, philological and general, of the

fast fading race. But these conditions were never fulfilled. Mr. Milligan's favor with Lady Franklin was great, but his competency as an ethnologist was infinitesimally small. Perhaps too his salary was too liberal, for he lived at his ease in Hobarton and never honored the aborigines with more than an annual visit. He compiled a so-called vocabulary of native words, which I have no hesitation in saying is perfectly worthless to the philologist as well as to the ethnologist, and the very brief notes which he occasionally produced with reference to the general characteristics of the tribes are not one whit more reliable. Thus was lost a splendid opportunity of giving to anthropology a complete history of this now extinct race, and, as a result, we really know very little about it.

It has been supposed that while Australia was peopled direct from the north through the islands of Timor and Rotti, Van Dieman's Land derived its population from the islands of the Pacific. This was Dr. Latham's opinion; but I have not been able to discover sufficient reason for the supposition. I am more disposed to think that the people originally came across Bass's Strait from the eastern portion of Australia, now known as Gipp's Land, through that chain of islands which connects the line of the Blue Mountains and Australian Alps with the mountains of Tasmania. In my intercourse with the natives of both places, I have found nothing which militates against this view; neither have I been able to detect any thing which seems to call for the theory that has received the powerful support of Dr. Latham.

When attention was first given to the natives of Van Dieman's Land, it was found that the tribes on the east differed in some respects from those on the west. They spoke the same language, but in dialects differing so much that the two people could with difficulty understand each other. Their customs were also different in some details. These points do not however indicate any difference of origin. The interior of Tasmania is of such a character that it would hardly have been possible—at any rate it was highly improbable—that the tribes on the east coast should have had any intercourse with those of the west. They were separated by an almost impassable barrier of mountain and forest, with an impenetrable undergrowth of scrub; so that it would have been very remarkable if some distinctive marks had not grown up in a series of generations. These distinctions however were completely lost when the whole aboriginal population was sent to Flinder's Island, and, except by their pedigree, it was impossible to ascertain with

which tribe the natives whom I knew in D'Entrecarteaux's Channel were connected.

In color the Tasmanians were not as dark as the Australians generally are, but in the Malay race it does not do to place too much stress upon the color of the skin or the character of the hair. I have met with many Australians who were of a lighter complexion than were the last of the Tasmanians. These people were indolent and dirty in their habits, and never made much advance towards the boundary of civilization; but I am not disposed to place these facts entirely to their own credit. They were badly treated, and neglected even to the last, and never had any opportunity of displaying any capabilities which in my opinion they certainly possessed. A question has been raised whether the Tasmanians knew the use of fire before it was introduced to them by Europeans. Some have answered this question in the negative; others have told us that the tribes in the south knew it, but not those in the north; and Mr. Milligan says that they knew the use of fire, but could not produce it. The belief of the natives themselves was almost similar to that of the Maories and other Polynesians, who profess to have been familiar with the use of fire since the early days of the world's history, when Mani took some from Mahuitta, an old woman who lived far down in the inner regions of the earth. From the direct evidence of the natives themselves, which of course may be taken as of more or less value, I am satisfied that the use of fire was known to the Tasmanians before the island was visited by Europeans.

We cannot regard the extinction of the Tasmanians as of so much scientific importance as if those people had met with different treatment from the colonists; but when we cross Bass's Strait we are met with the remarkable fact that within 20 years many tribes in that part of the island, which now constitutes Victoria, have entirely disappeared; even though they have at no time experienced ill usage from the settlers. In the east some tribes are still to be found, but throughout the greater part of Victoria the natives have mostly gone. It is necessary that I should here explain the sense in which the word "tribe" must be received. It has a different meaning from that which it would have when used in reference to the American Indians. I have heard it sometimes asked whether the tribes of Australia are not smaller and more numerous—other things being the same—than are the tribes of this country. In one aspect they are, but in reality they are not. The whole of Australia is deficient in water and animals, consequently the

means of living are precarious and difficult to attain. Nor is there any thing in the country with which the natives could trade. Their life therefore is a mere existence, and oftentimes they are on the verge of stavation. This scarcity of food naturally tends to the subdivision of the people. They live chiefly on roots, seeds, insects, and fish, and to obtain these in sufficient quantities they travel in small parties. These are distinct communities. They do not habitually intermix, but they have no objection to do so if the general interests render it expedient, or if circumstances render it possible. They may be on friendly terms or not with other similar sets, but as a rule feuds are rare among them. They have enough to do to get their living without fighting, although it is also highly probable that their very scanty fare has a general tendency to mollify their disposition. When then we speak of the Yarra Yarra tribes, the tribes of the Goolwa, or of the Murrumbidgee, as we usually do, the word tribe must be understood as applying to the various subdivisions of the people I have described. There are some very marked differences between the natives of the extreme north of Australia and those of the extreme south, but there are no distinct nations, or tribes, as there were and to some extent still are among the North American Indians. I have found different customs prevailing among different tribes, different dialects of language may also be detected between distant tribes, but still no decided line can be drawn between neighbouring parties. It would be less difficult to do this, perhaps, in the north than in the south; but even there I doubt the practicability. We ought rather, I think—in our present state of knowledge—to regard the Australian aborigines as one nation, divided, it is true, into many sections, which for convenience we call tribes, but which present no greater difference of an ethnological character than are to be found in the several counties of England at the present time.

Australia possesses a magnificent climate; equalled in no place in the northern hemisphere with which I am acquainted, and surpassed only on some of the smaller islands of the Pacific. The natives therefore have no great need of clothing, and accordingly they wear none. The trees are evergreen, and, although they do not possess a dense foliage, a few boughs always suffice to give shade and shelter to the aborigines. If clothing were a necessity, I do not know where it could be procured. Wild animals are scarce, and the natives, unlike the Maories and many other of the Polynesians, have no knowledge of textile fabrics of any kind. The only tools with which they are acquainted

are the spear. the boomerang, and the waddy; and their skill in using these has been greatly exaggerated. Some of them are dexterous in spearing fish; but I have frequently put up a mark at five and twenty paces and set four or five natives to work at it with their spears, but I have no recollection of them ever having hit it. When fighting takes place too, it is not an uncommon thing to hear of a battle lasting several hours, and ending without any body being much the worse. They dislike coming to close quarters, so that the waddy, as a weapon of war, is very harmless when compared with the tomahawk of the Indian. It is used especially for killing small animals, and it is also a legitimate instrument for keeping the women in order. That a people of so primitive a character as the Australian should be familiar with such an instrument as the boomerang is a point which to my thinking demands careful investigation at the hands of the anthropologist. But this instrument is not in such general use as is frequently supposed. I have more than once met with tribes who could not muster a boomerang among them. It may therefore readily be supposed that skill in the use of that weapon varies much. To throw it accurately towards a mark and to make it return to within a few feet of the thrower, requires considerable practice. I have met with natives who could do this with unerring certainty, but they are not the majority. I have seen a parrot brought down from the top of a high tree, and in a second or two afterwards the boomerang lying at the feet of the thrower; but it must not be supposed that this sort of thing is done every day, or by all the natives. The man who did it had no rival within my experience among his countrymen, and perhaps if I had never met him and witnessed his skill on many occasions I should never have credited the boomerang with so much value as, in good hands, I know it to possess.

It is right I should mention that these remarks, so far as they refer to the incapacity of the Australians, are more applicable to the tribes of the south than to those of the north. Independently of any physical differences, the latter are more warlike than the southerners. Although living in a warmer climate, they are more active and energetic, yet, with this exception, I am not aware that we ought justly to credit them with any higher or more civilized endowments.

My old friend Burke, who, with his companions, Wells and King, was the first white man to cross the Australian continent, and who perished on his return to Cooper Creek through the culpable blundering of one of his own party, found the natives exceedingly troublesome

as he approached the Gulf of Carpentaria; and Leichardt and his followers fell victims to the spears of the same tribes a little more to the eastward. But as a contrast to this, when Burke and his two companions were left to starve at Cooper's Creek, they were sustained for many days by the generous kindness of the natives whom they found in that locality. I do not attribute these differences of character to differences of origin. In the north the natives are better supplied with food, and their ranks are frequently receiving accessions from the wild tribes of the archipelago, and probably from the Malagar peninsular itself; in the same manner, though in a less degree, as the Philippine Islands receive reinforcements from China and the other Asiatic coasts.

The character of the average Australian is noted rather for its negative than for its positive features; by which I do not mean that these people are incapable of improvement. As a rule they are indolent and apathetic. They dislike any thing that gives them trouble, and still they are patient and persevering. They will pass two or three days without food rather than exert themselves to find a daily supply, unless at least it is close at hand and can be had without much effort. If they are in want of fire, they will often prefer to travel for another day or two, in the hope of getting some from their neighbours, than take the trouble to "make" it for themselves. Yet they will plod along over many long miles under a burning sun, without food, to change their location; or they will spend weeks diligently carving out a boomerang or a waddy, with a few rough stones. I have always found these people faithful and trustworthy companions. I have travelled among them through a wide area of country, and almost always alone. I have associated with many tribes and met with them at different times under very varied circumstances, and I have always found them uniformly friendly and kind, ever ready to render me a service even at their own personal inconvenience. They have a keen sense of honour. They will enter upon undertakings of hardship or danger for a master or one whom they regard as a friend, and they will not hesitate to risk their lives in his service. They are submissive and ever ready to do a kindness to a friend, if they find him in need or distress. But while this is the result of my experience among them, I must add that in all my intercourse with aborigines tribes in any part of the world, I have ever made it an invariable rule to treat them with kindness and *confidence*. I believe that to trust in their right intentions will go farther to win their friendship than a very large amount of bribery, and the effect is

assuredly more profound and lasting. I can say now, with the most complete satisfaction, that during the several years in which I have been brought into communication with native races—men and women whom the world calls savages—I have never experienced from them one act of enmity or ill-will, nor any display of feeling which would prevent me from going again among any of the Polynesian tribes with a sense of the most perfect security.

It is quite true that we hear from time to time of horrible massacres and cruelties perpetrated by Australian natives upon the families of settlers in the far interior. These reports are perfectly correct. But I have had favorable opportunities many times of enquiring into them, and I am quite confident that native attacks upon European settlements have never been made without provocation first offered by the colonists. The ill-treatment which the natives are called upon to submit to is oftentimes simply horrible. In Queensland, at this moment, they are being slaughtered indiscriminately and with the most disgraceful cruelty under the sanction of the government. And although the Australians will endure a great deal and are not easily roused, yet it is unreasonable to suppose that they will bear all kind of oppression with impunity. When they take the resolve, they resent an injury with all the unsparing cruelty of a barbarous race—heedless of age, sex, or innocence—every thing but color. It suffices them to know that a white man is their mortal enemy; not he alone pays the penalty, but his family, his household, his property, all suffer for the offence.

It has been supposed by many that no tribes of mankind have been found who were without religion of some kind. But a German missionary who went among the Australians many years ago, said that they had no idea whatever of a supreme being. Mr. Parkes, a member of the New South Wales Legislature, who is also a good authority, draws attention to the fact that there is no word in their language for either justice or sin; and Dr. Lang, than whom no one perhaps has had better opportunities for arriving at the truth, although it must be added that his judgments are sometimes prejudiced, said that not only had they no idea of a supreme divinity, "but they had no object of worship, no idols, nor temples, nor sacrifices; nothing whatever in the shape of religion to distinguish them from the beasts." I have examined this question with some care and I must say with the same result. I have not succeeded in meeting with any Australian who had a religion, in the strict meaning of the word. They have no belief in

or knowledge of a good spirit. Still less can it be said that they have ever conceived the idea of a supreme ruler or creator. But they are not without a belief in the supernatural. The South Australians, for example, have faith in the existence of a spirit or fiend, whom they call Moorundun. In Van Dieman's Land he was known as Namma. But they do not worship this ideality. I never could learn that the Australians had any conception of prayer, propitiation, worship, or sacrifice. Yet Moorundun is held in extreme awe. He is an evil spirit, ever working mischief, but especially dangerous at night. Hence the reason why the Australians will never move about, if they can help it, after dark; an objection by the way which is equally shared in by many other of the Polynesians, and especially by the Maories. Moorundun is supposed to be a "black fellow" of huge size who lives in the bush, and is accompanied and aided by myriads of small imps who live in the scrub and on the boughs of the trees. The air and water are also supposed to be peopled by similar creatures, whose whole purpose is to annoy and injure mankind and to aid their master in his diabolical propensities. Moorundun is a notorious liar, the truth is unknown to him. His great object is to steal women and children. The latter he devours; the former he devotes to the gratification of his own pleasures, and then either restores them to their tribe or eats them. He is a consummate thief, sly and revengeful, ever uttering obscene and abusive language, imprecations, and lies.

The belief in a future existence varies among the natives. Some entertain the idea that after death they go to a happy country, where there is an abundance of fish and kangaroo to be had without trouble; others think that they are destined to be changed into white men; a creed which contrasts strangely with that of some African tribes; and many of them have no belief at all. In like manner, I should mention that the belief in Moorundun or his equivalent is by no means universal, and it is worthy of note that where his existence is not acknowledged the character of the natives is the more favorable. His disciples are apt for instance to imitate that spirit in untruthfulness, although I do not know whether we are to regard this as an indication of propitiary intentions.

Among the good traits in the Australian character there is one that needs special notice at my hands, because it has been referred to very prominently by some of the female philosophers of this present day. The rapid disappearance of many aboriginal tribes, which seems to be

almost peculiar to Anglo-Saxon colonization, has deservedly attracted a great deal of attention, though not as much as it deserves; and it is no easy matter to discover the causes of the phenomenon. But Miss Nightingale, who in this matter had no experience whatever to justify her opinion, declared before a meeting of the Social Science Congress, a few years ago, that the chief cause of the disappearance of aboriginal tribes is to be found in their unchastity. As a theory this is manifestly worthless; but as a question of fact it is utterly untrue. I do not mean to affirm that absolute moral purity prevails among the Australians, but there is no such thing as that indiscriminate intercourse between the sexes which some persons like to imagine. Even polygamy is not an established institution; and although marriage can have no relation to religion where no religion exists, it is much more highly esteemed by most of the Australian natives than it is in many so-called Christian communities which I might name. It is no uncommon occurrence to find old people who have lived together as man and wife from their youth, with a constancy which would shame very many couples who have solemnly pledged themselves at the altar of the Church. Such charges as those made by Miss Nightingale, and which have been repeated by other female reformers of society, are therefore not only gratuitous but unjust.

The Australians have few traditions, or if they have any it is extremely difficult to get at them. But it is worthy of note that among many of them there is a tradition of a time when the world was under water, very much resembling that which was found by Humboldt to exist among the South Americans, and not materially differing from the Mosaic account of the deluge. I am compelled by want of time to omit the notice which I should like to have given of the language of the Australians, which has many beauties and is not difficult to acquire; but I may be allowed to point out the wide field which opens out before the Anthropologist who would devote himself to the philology and thence to the traditional history of these people. I cannot but think that such an enquiry would be rewarded with interesting and valuable fruits.

There is a custom prevalent among many tribes to which hard names have sometimes been applied, although it is one very partially known. An incident which once happened to myself will illustrate it. On a bright summer day, it may be sixteen years ago, I was wandering far in the interior of Australia. After the morning meal, usually taken at

sunrise, I had rested perhaps two or three hours on a shady knoll, revelling in that wondrous feeling which can be enjoyed only under a luxurious atmosphere and in the midst of an absolute solitude. At last, mounting my horse, I travelled some eight or ten miles, when I fancied I heard distant sounds which I at once recognized as coming from a band of natives. My curiosity was aroused, and turning aside through a low dense scrub that skirted a piece of elevated land, then crossing the brow of a hill, I saw before me one of those beautiful tracts of country which so often surprise the traveller amid the arid plains of Australia. Far away extended the landscape, studded with trees, and here and there darkened with a piece of denser vegetation. Immediately beneath me lay a little valley, covered with luxuriant herbage and bordered with a fringe of eucalipti. In the midst was a small group of natives, by whom I soon found that my presence had been already recognized. I rode towards them and was met by two of their number, who, after the interchange of a few civilities, led me on to their companions. They numbered between thirty and forty, the majority being females. All were entirely naked, and exhibited physically a much higher type of the race than I had seen farther south. As I approached them, the noise which at first attracted my attention ceased, and the whole party gathered round me. But having given them to understand that I intended to pass a few hours in their company, they proceeded with their ceremony, not heeding my presence. At the foot of a large tree, sat or rather lay, supported against a log, an old man. His face, chest, arms and hands, had been burnt. The flesh still unhealed lay bare and festering under the glaring sun and the unceasing irritation of innumerable flies. In addition to this he was suffering from disease of the lungs, and it was with evident pain and difficulty that he breathed. Two women bathed the old man with pipe clay water, and the rest of the party assembled round him and indulged in the wildest gesticulations, which were accompanied at intervals with a strange monotonous cry that occasionally changed into a weird almost unearthly tumult of shouts. I at once divined what was to be the end of all this, and, after watching the proceeding for some time, I rode away again into the bush. Here, at a distance of two or three miles, I rested till evening. When the sun had set, and the full moon was well above the horizon, I once more mounted my horse and retraced my steps. I had at first some difficulty in finding the exact spot where I had left my friends. All was perfectly still and

silent. But after looking about for some time, a huge "black fellow" suddenly stood at my side, his dark proportions seeming magnified in the shadowy light of the moon. The whole tribe was close at hand, but my companion, whose instinct seemed to tell him the object of my visit, took me aside to a recess among the trees, where lay the body of the old man. His eldest son had knelt upon his chest, while two women had strangled him with a strip of bark.

This custom of killing the old and helpless is not universal, but it prevails very generally. Age is respected, but as soon as a native becomes a burden to himself and to his tribe he gladly and not without a degree of pride submits to being put to death. When we remember the mode of life of these people, there is more real kindness than cruelty in this custom. It arises certainly from no savage tendency to violence; and although at a superficial glance there may be something horrible about the idea, we ought to take all the circumstances into consideration before we pass a decree of condemnation upon it. The tribes live by travelling from place to place. They have certain favorite haunts, but they cannot remain long upon one location. They have no means of carrying with them those of their companions who are permanently disabled, and so they have established an institution which saves such from starvation.

The principal tribes of the other parts of Polynesia are of a higher type than the Australians or the Tasmanians. This remark applies especially to those portions of the population which have sometimes been described by the term Polynesian, as distinct from the Melanerian. The latter merge into the former at about the longitude of the Figis, where we find a people possessing the characteristics more or less of both divisions. Time however will not permit me to dwell as I would wish upon many of the details of character, custom and language, of these interesting people. I must content myself with only such general observations as are suggested upon a consideration of their probable future. I ask to be allowed to make only one exception, for the purpose of expressing my conviction upon the subject of cannibalism, for which the Figians and Maories especially are rated in many books and in missionary records. I do not believe in cannibalism. I did believe in it once; but that was before I had lived among the so-called cannibals. As my knowledge of these increased, my belief in the custom diminished; till now there is none left. By cannibalism I understand the use of human flesh as an article of food; made so,

not of course by necessity, but through choice and custom. I do not deny that many of the Polynesians eat human flesh, but they do it rather as a conscientious duty than as a social habit. When they kill an enemy there are certain portions of his body which they eat. They do this to dishonor their foe and to quiet their own consciences. They have accomplished all that duty and the ethics of war require, when they have tasted a mouthful of the fat that is near the kidneys; and if they go farther and make a feast upon the greater part of the body it is because they are over-elated with victory, or because they are giving way to a more than ordinary hatred of the man whom they have overcome. Perhaps too they may sometimes go upon much the same principle that a white man adopts, when, having drunk one glass of whisky punch, he goes on drinking other glasses of whisky punch, until he gets much more than either does him good or improves his reputation. If this be cannibalism then the Polynesians are cannibals; but it is not the sense in which the word is constantly being applied, and in which I claim that it has no existence in many places where it has been said to prevail. My opinion therefore is that if any one becomes food for a Polynesian it is his own fault, and not merely a consequence of his going among these people.

Let me now more particularly but still very briefly advert to a subject which in many of its bearings is of the greatest interest to anthropologists, I wish I could say to society generally. I allude to the future of the Polynesian race. I need not here dwell upon or even pause to illustrate the fact, which is so prominent in the history of Anglo-Saxon colonization, that aboriginal tribes seem destined to disappear before a higher civilization, when that is presented by our own people. Numerous evidences of this will occur to the minds of all present, of which perhaps not the least important, although the most recent, is the rapid diminution of the Negro, which is now and has been since the civil war going on in the United States. I think however we must acknowledge as a law in this matter, that the disappearance takes place in the direct ratio of the lower mental and physical development of the aborigines, and it is upon this that I am inclined in a great measure to shape my conclusions. In this country for example we see a fusion of the Indian with European blood, and at present we have no data upon which we can determine whether the mixed race will be perpetuated. But among the aborigines of Australia we see no such tendency. I have met with the offspring of black

women and white men, but they are very rare in Australia, and I am not aware that any members of a second generation exist. In my belief the Australian aboriginal is destined to disappear as completely as have the tribes of Tasmania; although in holding this view I do not wish it to be understood that I regard him as a being so low in the scale of humanity as to be incapable of improvement. Different individuals among them present different degrees of capacity for mental culture, but many of them are open to considerable elevation. I cannot say that in their natural state they are wanting in tenacity of purpose. They will track a foe with the most untiring diligence, and in many other things display a remarkable perseverance and singleness of end. But when civilization attempts to deal with them they show an equally great deficiency in the power of application. They are often good and intelligent farm servants, and, if properly managed, they seldom fail to acquire in a short time some rudiments of religion and general education. They are remarkably susceptible to religious impressions, and submissive and trusting to their teachers. Their memories are retentive. The schoolmaster has no difficulty in getting them to recollect what they have once grasped, but he finds it a very difficult task to fix their attention. Their faculty of observation is great, but all the good qualities which they possess seem to fade away directly we seek to apply them to the teachings of civilized life. Their precarious mode of subsistence militates of course very strongly against any great physical development, but when well fed they evince considerable powers of endurance. They become clever stockmen and daring riders. I knew a member of the Murrumbidgee tribe who was one of the best jockeys in New South Wales. It will also be remembered that England was recently visited by a company of aboriginal cricketers; and these men worked out a by no means discreditable record, both with some of the best English clubs in Australia, and with many clubs in England.

The government of Victoria has always exhibited a marked desire to protect and utilize the native tribes. They have also been generally well treated by the settlers of that colony. A few years ago, an effort was made to give as many of them as would avail themselves of the offer some knowledge of agriculture and the art of earning a living. For this purpose a large tract of fine land on the banks of the Goulburn was set apart for them. Tools, seeds and instructors, were provided, and many natives came to the spot and proved themselves exceedingly handy with the various implements placed at their dis-

posal. But they showed no steady application. Fixture in one locality did not accord with their ideas of freedom, and after they had remained on the land a short time they all disappeared and went back to their primitive mode of existence. In South Australia, a different plan was adopted. The missionaries who went among the aborigines had successively failed to accomplish any thing. They were at first listened to with attention, because the natives regarded them as members of their own tribes risen from the dead, and they listened as to men of authority. But they soon discovered that the practice of the white men did not accord with their precepts, and in this way they lost confidence. Then failing to see any immediate benefit to be derived from an adherence to the teaching they received, they soon learned to treat it with a feeling little removed from contempt. But, in 1859, the "Aboriginal Friends' Association" appointed a resident agent in one district, who hit upon a different expedient. He kept religion in the back ground at first, and, selecting three of the most intelligent tribes—those of Corong, Goolwa and Point Malcolm—he devoted himself to learning their habits. They lived chiefly by fishing, and he at once set to work to teach them improved means of taking fish. In this and by similar ways he succeeded very quietly in making himself necessary to them. They valued him, for they lived better now than ever they had lived before, and with far less labour. At last, when by these means he had completely won their confidence, he began to instil into them moral precepts, and they listened to him and profited. They had had their feeling of gratitude—always strong in the native breast—aroused, and thus the way was cleared for the fair reception of other culture.

I must however add, that all experience seems to indicate that we cannot eradicate from the Australian mind a longing to return to the aboriginal state. I have known natives who have been steadily employed for years upon one station, suddenly and without any apparent reason, strip off their clothes and go to rejoin their tribe. I am prepared to give due weight to the consideration that where the Australians have proved quite intractable in the hands of their teachers, there has been as much want of tact on one side as want of capacity on the other; but we possess absolutely no reason for thinking that the natives are capable of any, even moderately great, mental effort, still less of any high degree of intellectual culture. At the same time, however, I wish it to be distinctly understood that I cannot endorse the opinion that they are incapable of considerable advance in civilization.

The natives of New Zealand, the Figis, and the Navigators' Islands, must be very differently regarded. An unfair prejudice has grown up against the Maories, in consequence of the wars which have so long agitated New Zealand, but I say most emphatically that that war would never have occurred but for the disgraceful conduct of the New Zealand colonists. Language too strong cannot be used in condemnation of the treatment which the Maories have received at the hands of our people, who have deceived, misled, plundered, butchered them, with unmitigated atrocity, and then asked the world to sympathize with them when the Maori turned upon his oppressor. I know not one redeeming feature in the policy of the New Zealand colonists towards the natives, though if any palpable proof were needed to show that the Maori is worthy of a better destiny than extermination, it is the manner in which he has sustained the contest against his European tyrants. Implicit faith may be put in the honor of a Maori. His word is irrevocable. I confidently believe that no amount of injustice inflicted upon him by one whom he has promised to protect would induce him to swerve from his pledge. But the whole treatment of the colonists towards him has been a systematic course of trickery and deception, and even under that he never offered violent resistance until he had received an amount of provocation which was far beyond what would have sufficed to drive any civilized community to arms. The prejudice against him is therefore unjust. The Maori is capable of a high degree of mental culture, probably as capable as any aboriginal in the world, and many Europeans. He is a successful agriculturist, a shrewd diplomatist, and oftentimes a successful merchant, an honest (that is to say a trustworthy) lawyer, and an eloquent politician.

Of the Figians we know less. They have not had the same advantages, and disadvantages I fear I must say, of intercourse with Europeans; but I am strongly inclined to the conviction that the talent they undoubtedly possess as traders, and in the developement of the resources of their rich and beautiful island, may be taken as some evidence that they are capable of holding a much higher position than they now possess in the scale of humanity, I might say in the scale of nations. They are easily taught. They are endowed with many qualities which render them fully capable of social and political organization, upon our own basis, as well as of self-government. And I think that a series of independent nationalities throughout the Pacific, composed of now existing materials, should be the object sought to be attained

by those nations which claim to be civilized. If England should colonize these islands, extermination, with perhaps some interfusion, would certainly follow sooner or later; and a similar result would be as sure and more rapid if America were to succeed in her schemes of annexation. But left to themselves there is character, intelligence, capability, in the natives of Figi or Samoa which fully qualify them for an independent position in the world and an honorable status among the nations.

But I have already exceeded my legitimate limits, and extended my remarks beyond the time which I had a right to claim from this society. To convey a general insight into the character of the people I have been considering, I fear I have laid myself open to the charge of discursiveness, and perhaps failed to satisfy those who looked for the technical details of racial distinctions. These however I preferred to omit, rather than to treat them imperfectly; and hence I must ask the society to regard the observations I have made, not as an attempt at a complete review of the Polynesian tribes, so much as the preface to a more elaborate notice of the character of these people, which may be worthily considered by some more competent anthropologist than myself.

ON LATIN PRONUNCIATION.

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Among the questions which have agitated the learned world since the revival of classical studies there is one still remaining, unsolved and perhaps insoluble, the correct pronunciation of the Latin language. With the scanty materials which have descended to our time, it becomes us to be cautious rather than confident; and yet there is perhaps no subject upon which scholars express themselves with greater temerity than this concerning which we know so little. The glory of ancient Rome has long been dimmed. Her pomp and state—her invincible arms—her haughty spirit, have passed away; her very language is numbered with the departed dialects to be spoken no more amongst the nations of the earth. Had some prophetic voice foretold to the senate that, in the progress of ages, the time was approaching when all these things should be accomplished, we may imagine the scorn and contempt which would have overwhelmed the seer. On that memorable occasion when the doom of conspirators was the subject of debate, when Cicero vehemently demanded their execution, and when Cæsar and Cato denied or jeered at the immortality of the soul, the fate which awaited Rome could not have found a place in their wildest dreams. That fate overtook her in its appointed course, levelling her pride with the dust, and reminding nations of the truth which Edmund Burke applied to individuals—"what shadows they are and what shadows they pursue." I have said that the Latin language is no longer a living tongue. Prouder, however, than the memory of ten conquests, nobler than her works of art, the monuments of Roman intellect remain, the delight and admiration of a distant age. Being dead Rome yet speaketh, to the eye, if not to the ear. She became the fruitful mother of a family of nations, but her language has fared ill with posterity. Ecclesiastics adopted it, literary men employed it as "the language of the learned." In it were composed the prayers of the Western Church, and the writings of the fathers and divines of that communion. But it was not the Latin of the ancient Republic or the early Empire. Its vocabulary was extended without being enriched; the strictness of

grammatical structure, and the purity of style concerning which the old Roman was so sensitive, fell a prey to the barbarism of the times. The best known work of the mediæval period, the celebrated treatise, "De Imitatione Christi," can hardly be said to have been written in the same language as that in which Cicero, or Horace, or Tacitus expressed their thoughts. The use of Latin as a spoken language, by those who knew nothing of the principles of pronunciation, has tended further to debase it. A certain moribund vitality has indeed been secured for it, but only at the expense of elegance in diction and correctness in expression. One of the consequences has been, that a number of theories of pronunciation have been devised, none of which will stand the test of intelligent scrutiny.

In the following paper it is proposed to examine those theories of pronunciation in which the attempt is made to indicate the quantities of syllables by means of accents and vowel sounds. It seems certain that when the Latin language was spoken with classic purity—when Roman arms and Roman literature were achieving their claims to imperishable renown—sound, accent and quantity, all had their share in the pronunciation of every word. Before entering upon the main question, it seems advisable to consider the nature of each of these three elements. From the explanation I propose to give, it will appear that quantity is not to be confounded with sound; but, on the contrary, is entirely independent of it. In order to guard against misunderstanding, it will be understood that by the term "quantity" is here meant duration of time—those syllables having the same quantity which are pronounced in the same time. In every language the sounds of words depend upon and are limited by (1) the capabilities of the human voice. These evidently vary in different races. For an Englishman of our day it is perhaps impossible to attain a correct pronunciation of the French *u*, the German or Gaelic guttural *ch*, or the Spanish *j*. It may be that the organs of speech have undergone considerable modification in the progress of time, and that here we might encounter a difficulty in acquiring a correct pronunciation of Latin, even if our knowledge of it were otherwise accurate. (2) The sounds of the letters which form the alphabet of the language. (3) Variations of these sounds and the formation of other sounds by diphthongal or consonant combinations. These may be roughly stated as representing all the articulate sounds which the vocal organs of the particular race or nation are able to utter; although in all languages, several sounds are expressed by one

letter, and, on the other hand, some of the sounds have redundant or, at any rate, equivalent representatives. It would be beside the purpose of the present paper, even if it were possible, to attempt an exposition of the nature and range of the sounds employed by the Romans. The vowels, their most important letters, we know had, each of them, a variety of sounds. These variations, however, did not arise from any connection between sound and quantity. They were regulated rather by the manner in which the letters were combined, and further by the custom of the time. We may reasonably infer the latter to have been the case from the fact that similar changes have been undergone, and are even now in progress, in modern languages—a conclusion which is confirmed by the early Grammarians. In treating of the sounds of letters these writers are invariably silent as to any distinction between long and short vowels, so far as sound is concerned. Indeed there are passages in which it is expressly stated that there is no such distinction. Probus, for example, says, "*A* autem et *E* naturam suæ vocalitatis, sive correptæ, sive productæ, custodiunt." Moreover many instances are cited of words changing their accent or their quantity, but no mention is made of any corresponding alteration in the vocal character of the syllable. Does it not, in fact, seem extremely improbable that all words which include syllables of doubtful quantity, or syllables whose quantity depends on position, should have two pronunciations almost totally distinct? There are, it is true, some statements in the writings of the Grammarians which, at first sight, appear to conflict with this conclusion; but the apparent discrepancy will, I think, disappear upon a closer examination of the various passages. One example may suffice. Capella says: "E vocalis duarum Græcarum vim possidet. Nam cum corripitur ε Græcum est ut hoste; cum producitur η est ut ab hac die." The meaning of this quotation depends entirely upon the significance of the word *vim*; that it refers here only to quantity may be gathered from the use which Victorinus makes of the corresponding word *potestas*:—"Potestas est quæ in ratione metrica valet cum aut producta aut correpta est." In fact Capella could not have meant by *vim* any distinction in sound, for in his time η and ε had become identical in that respect, as Sextus Empiricus informs us:—"Correptum Eta (ait) fieri Epsilon, productum contra Epsilon fieri Eta." On the whole it is fair to conclude that sound and quantity have no necessary connection whatever; but are in their nature distinct, the one from the other; and further that the vowel sounds depended upon

their combination with other letters, and changed with the varying custom of the times. The principal or alphabetical sound of each of the vowels cannot now be ascertained; but, following those who have most deeply investigated the subject, we may assume as extremely probable that *a* was pronounced like the *a* in papa, *e* like the circumflexed *e* in the French bête, *i* as the *i* in might, *o* like the *o* in note and not, and *u* like the *oo* in boot. With respect to the consonants, there is not so much room for doubt; for the most part they have a well established pronunciation in all languages, which is only modified by position. It is clearly established that *c* and *g* were never soft as they are sometimes made before vowels, and that *j* had the sound of *y* in youth, as it still retains in the Italian.

With reference to the second element—accent — the Grammarians are more explicit. They have left us a complete set of rules according to which the proper syllables may be correctly accentuated. These rules form part, as far as they go, of a system of elocution. They indicate those changes in the pitch of the voice which give force and effect to spoken language. The following are some of the rules relating to the use of the acute and circumflex accents:—

(1) A monosyllable takes the acute or circumflex according as its vowel is long or short by nature.
(2) In dissyllabic words, the accent is on the penult.
(3) In words of more than two syllables, the accent is put on the penult if it is long either by nature or position; the acute is put on the ante-penult, if the penult is short.

To these rules there are many exceptions which it is unnecessary to mention here. To these principles of accentuation two German critics, Lipsius and Vossius, have taken exception, but the reasonableness of the rules is apparent, and the fact that they were formally acknowledged as early as the days of Quintilian may serve as a sufficient vindication of the Grammarians.

The third element, that of quantity, depends upon the length of time occupied in the utterance of a syllable. Originally some long vowels appear to have been distinguished from short vowels either by duplication as *aa*, *ee*, or by capital letters as *I*. When these rude expedients were abandoned, they were replaced by the ordinary marks – ⏑, by doubling the following consonant, as in classis, summus, etc, or a similar result was secured by other means. In all cases, however,

whether these marks of quantity were present or not, a long syllable occupied twice the time of a short one in enunciation. So sensitive were the ears even of the common people to this element of speech that, as Cicero tell us (De Orat. c. 50): "If the smallest offence be given by an actor so that any sound is made too short by contraction or too long by extension whole theatres burst into exclamations."

To enable us to pronounce a word as the Latins did, therefore, it will be necessary for us to discover the proper mode of expressing in its enunciation the sound, accent and quantity of every syllable—a problem we cannot hope to solve with any approach to exactness. It is obviously impossible to construct a set of rules for the guidance of future generations in the pronunciation of any language. Such a system of Orthoëpy would require a language invariable for all time; for its canons, to be available, must be illustrated by examples taken from the language it is framed to teach—a condition of stability which can no more be fulfilled in language, than its opposite quality, perpetual motion, can be devised in the department of mechanics. How signally such a set of rules must fail of its object will be evident if we consider that the proper application of the directions of the early Grammarians is involved in the greatest mystery. The only possible means, it seems to me, of devising approximately intelligible rules for the pronunciation of any language would be found in some mechanical method of expressing the element of speech—an expedient only practicable when man succeeds in inventing an adequate instrument. It would be useless now for the most acute theorist to strive to pronounce the Latin tongue as it flowed from the lips of Cicero. The most we can hope to accomplish is to frame, for our own times, a system by which one or more of the elements of pronunciation may be, in some degree, expressed or inferred. The rules in any such system would of course vary with the object proposed and the conventions on which the means for effecting that object are founded. The mode of indicating the first element should find clear and unambiguous expression in every system. The precise meaning of any Latin we may have occasion to use can be adequately conveyed to others in speech, only by a consistent and established set of sounds. The most important element to us is quantity; but any attempt to express it intelligibly in speech is extremely difficult, inasmuch as it finds no place in the vocalization of any modern language. Moreover this difficulty is further complicated by the attempt to confound sound with quantity, and to present them to the

student as dependent, the one upon the other. It will be found, I think, upon careful examination that the methods employed in England and America to express quantity necessarily fail to effect that object, because they are the fruit of incorrect generalization from a few of the rules laid down by the Grammarians to govern a totally different element—that of accent.

So far as regards the representation of the first element in the same country, it is immaterial for all practical purposes whether it be attempted to reproduce the ancient Latin sounds or not. In fact each country now reads Latin according to the analogy of its own language and the fruitless attempt to discover the original sounds is wisely abandoned. There is, however, no reason why natives speaking the same language should not have one uniform system, each word being pronounced in a fixed way, just as educated men pronounce their native tongue. As it is, the number of systems in vogue in America and England is a source of great perplexity, which is not by any means relieved when we consider that there are many who employ no system at all. To secure uniformity it would be necessary to frame laws for the sounds of vowels and dipthongs—a matter of considerable difficulty in consequence of the variety in the pronunciation of the same vowels and dipthongs in different words. Take for instance the sounds possessed by *o* as exemplified in note, rod, how, move, dove, or by the diphthong *ei* in height, freight, receipt, their. Similar variations in the case of other vowels and vowel combinations will readily occur to the mind; it is unnecessary therefore to adduce them. Of the entire number of these variations in English vowel sounds, it will be found that there are two sounds of each vowel occurring more frequently than the rest. These may be denominated the prevailing sounds of the vowel, and are usually known to us as the open and close vowel sounds. In attempting to arrange a complete set of vowel sounds for the Latin, several courses are open to us. In the first place, we may adopt for the purpose the prevailing vowel sounds as they are employed in English, selecting, in any particular case, the one we should be most likely to use if the word were English. Or secondly, we may rigidly adhere to one uniform set of sounds in all cases. Finally, we may adopt the system prevailing in some foreign country. Of these three plans I am inclined to prefer the second, provided the sounds chosen were such as to assimilate our pronunciation to the systems in vogue on the continent of Europe, a step which would tend in some degree to the adoption of

an uniform system throughout the educated world. Obviously the sounds best suited to such an object (with one exception, that of *i*) would be those already mentioned as being perhaps the nearest approximations to the ancient Latin, *i* being pronounced like the English *e*. The consonants and dipthongs present like difficulty; the sounds of the latter being indicated either by the prevailing sounds in English, or, better still perhaps, by enunciating their component vowels very quickly one after the other. In a system constructed in this way to express the first element alone, no regard being had to the other two, the syllables would be pronounced in monotones of the same length.

It has been assumed that the laws of accents as given by the Grammarians are valid, but there still remains an obstacle in the way of a proper understanding of this element, because the variation in the pitch of the voice in pronouncing differently accented syllables is unknown. If, however, we suppose that it was not materially different from that which takes place in speaking the modern languages, we can, at any rate, mark the presence of the acute accent in words of two or more syllables by accenting the syllable on which it occurs, in the same manner as syllables are accented in English. When, for instance, we place the accent on the first syllable of into, over, under, etc., the pitch of the voice is higher than in articulating the unaccented syllables; so also when we pronounce the words arrest, detect, excellent, arbitrary, illicit; and generally it may be shewn that the voice is higher in pronouncing syllables, accented according to the English method, than it is in the utterance of the unaccented syllables. It is not intended here to assert that elevation of the pitch is the essential element in English accent. Loudness or stress is much more evident, although the nature of its connection with the former it does not seem easy to explain. It is only necessary for the present purpose to establish that in English accent we have an element, though a subordinate one, substantially identical with that which, we are told, was the essential characteristic of accent in Latin. If now, sound and accent being considered as independent elements, syllables be pronounced according to a system embracing only these, they will no longer be uttered in monotones, yet the time of each will be the same; in other words quantity is still wanting. There are examples in English which are apt to mislead us on this point, inasmuch as the times of the accented syllables are longer than in the unaccented ones. It will be observed, however, that in such cases, although a change in time takes place

along with the acute accent, it is not a necessary concomitant. The concurrence is merely accidental, and the accent is usually expressed in all the modern languages without any accompanying change of time. In Latin, on the contrary, the enunciation of syllables occupied times materially different, but the longer syllables were not necessarily those marked with the acute, as they sometimes are in English.

Since the versification of the Latins depended entirely upon the *quantity* of the syllables—in other words, upon the relative time occupied in their utterance—it is of the utmost importance that this element should be well understood, and, as far as possible, clearly defined in any modern system of pronunciation. There is, however, a great and perhaps insuperable difficulty in the way of any fitting expression of it. Quantity in the ancient sense of the term, has ceased to be essential to what may be styled the mechanical department of poetry; in the rhythm of the modern languages it is absolutely wanting. So completely has this element disappeared, in the progress of time, that in music, living and fresh as that "divine art" is and must ever be, most people are unable to judge with accuracy of duration, even after considerable training. Whether, therefore, the attempt in our day to discriminate quantities be futile, or the systems framed to accomplish the object fail from ignorance of the true principles of pronunciation, it is certain that our methods afford no assistance in expressing this chief element in Latin pronunciation. It seems probable that the idea of pronouncing according to accent owes its origin to the manner in which the liturgy of the Church of Rome is read or intoned, and that, by a mis-conception of the system, people have been led to confound accent and quantity. That some error of this description lies at the bottom of modern mistakes regarding pronunciation seems clear when we find that according to prevailing systems it is proposed to indicate quantity, (1) by accent, (2) by giving the vowels different sounds according to their length. From the clear and easily defined distinction already pointed out between quantity and accent, the success of any method of this kind is antecedently improbable. It would not be more unreasonable to assert that time in music can be represented by variations in the pitch. Taking the first of these schemes, it is plain from an examination of the laws of accents, even supposing them to be invariably true (and they are not), that it is only possible to infer the quantity of the penults in words containing at least three syllables. Such a system is evidently worthless as an exposition of quantity, but

it seems unobjectionable, if designed merely to explain accentuation, and if it be conceded that the quantity of *one* syllable only can be inferred in certain cases with tolerable accuracy. The faulty application of the laws of accents has led modern theorists far astray on the subject of Latin pronunciation. Their mistakes have resulted in the penult being considered the only syllable whose quantity they care to express, whereas it has not been observed that in such cases they are really expressing the accent and inferring the quantity. It is to be lamented that the *odium philologicum* has so completely blinded educated men as to induce them to sneer at the ideas of quantity entertained by those whose patient erudition and honest investigation of the truth are at least equal to their own.

The second proposal which is the complement of the first is open to the still stronger objection, that it rests upon an arbitrary assumption, neither appropriate nor effective, and for which, it may be added, there is no semblance of authority. If we take the sounds representing the long vowels which I have ventured to mark (a_1 e_1 i_1 o_1 u_1), there seems no sufficient reason why they should be regarded as differing in point of time from the so-called short vowels (a_2 e_2 i_2 o_2 u_2), which can be equally prolonged. There is no difference so far as the expression of quantity is concerned by the mere change of vowel sounds in such words as the following:—mŏvet, mōvit; fructŭs, fructūs; bĕne, bēta; bĭbo, bīmus; lăbor, lābor. According to this theory we ought to say —frigidus, maritimus, homo, domus, cogito, colonus, quĭs, quīs, and so on. Even were this system capable of perfect and universal application it could only enable us to infer with probability instead of expressing with accuracy what the Latins meant when they spoke of the quantity of a syllable. At any rate, it could only be serviceable as a supplement to the fallacious method of indicating quantity by accent. In addition to the objection that systems like these are purely factitious — conclusions drawn from suppositions and arbitrary premises—it is only necessary to point out that the sounds of short vowels are generally the same as those which become long by position or dipthongs. The *i* for instance has the same sound in marĭtimus and littera; the *e* in bĕne and pedo is, so far as sound is concerned, identical. This objection might, of course, be removed by ascribing to the vowels long by position the sounds of the long vowels, but the insuperable difficulty would still remain, that such a contrivance would fail

because it is not universally applicable. The practice of those who advocate the theory is the most effective argument against it. How, for example, would they pronounce such words as these:—spĕi, rĕi, fĭeri, vīs, fīs, sīs, dīe, hĭemis, Ilĭadis, Hamadrўades, lūgeo, lūceo, stŭpeo, rŭbeo, fŭerat, cŏemo, cŏalesco? Moreover, how do they propose to distinguish words of doubtful or variable quantity, *e.g.* Cўclopes and Cўclopes; prŏpago and prōpagine; mŏvet and mōvit; fŭgit and fūgit; hic amŏr, hoc studium, etc., and Omnia vincit amōr, et . . . . Until they are able to adapt their rules to every case which may arise in the language of a people so ardently attached to rhythm and so morbidly sensitive of false elocution as the Romans, they can lay no claim to the possession of a perfect system.

In conclusion let me briefly state the positions I have attempted to establish:—

(1) That the quantity cannot now be expressed with any approach to accuracy in modern speech, and that if discerned at all, it can only be by inference from the other elements.

(2) That conclusions drawn from accent can only be valid when applied to the penultimate of words of more than two syllables. In all other cases the quantity must remain wholly indeterminate so far as pronunciation is concerned.

(3) That in attempting to construct a system of pronunciation adapted to our wants, the scanty knowledge we possess only warrants us to require (*a*) that the acute accent shall be expressed in accordance with the law as laid down by the Grammarians, and (*b*) that one of the two sets of sounds previously suggested shall be fixed as the uniform standard of enunciation wherever the Latin language is read or spoken.

The practical results of these desultory observations may appear to be of little value; but when we consider the dogmatic positiveness with which untenable views upon this subject have been asserted, it will not appear an idle work to sweep away the rubbish even at the cost of exposing the poverty of the knowledge we possess. In a department where it is now impossible to extend the limits of the information at our command, it is no small task to distinguish certainty from fanciful invention. The chaff may add to the mass, but it is only the wheat which can be sifted with profit, and treasured, be it much or little, in the garner of the world.

ON THE CLIMATOLOGY OF STRATFORD, ONTARIO.

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Stratford, where the observations which form the groundwork of the following papers were made, is situated in 43° 25′ N. lat., and long. 80° 58′ W., at an (approximate) elevation of 1182 feet above the sea level. The surface of the adjacent country is generally level or slightly undulating; and as the water-shed of the western section of the Province of Ontario passes within a few miles of the town, its position gives a more than ordinary interest to the meteorological observations taken there. The instruments (supplied by the Chief Superintendent of Education) are fixed in position in a shed attached to the north side of the Grammar School building, and are properly protected from being unduly influenced by radiation. The hours of observation are 7 A.M. and 1 and 9 P.M., which are probably not the best (meteorologically) that might have been chosen, but which were, I believe, selected to suit the convenience of the Grammar Schools, in connection with which a system of meteorological observations has for some years been in operation.

In this paper I propose to show the principal steps employed in computing the normal temperatures, together with some of the more important results. The materials employed in the construction of the formulæ for computing the normal temperatures, are derived from observations made by me during the years 1861–'69, inclusive, and are given in the following tables:

MONTHLY MEANS OF TEMPERATURE AT STRATFORD.

7 A. M.

YEAR.	JAN.	FEB.	MAR.	APRIL.	MAY.	JUNE.	JULY.	AUG.	SEPT.	OCT.	NOV.	DEC.	YEAR
	°	°	°	°	°	°	°	°	°	°	°	°	°
1861	16·48	21·85	22·89	38·06	43·65	58·37	62·56	60·18	52·60	44·56	32·56	28·65	40·20
1862	17·81	16·86	23·08	36·96	48·34	57·12	62·06	61·85	54·35	44·44	32·54	26·27	40·14
1863	25·30	18·54	21·53	37·25	50·83	55·91	62·08	59·81	49·31	39·45	34·72	21·66	39·70
1864	16·93	19·84	23·52	36·80	50·58	56·25	62·19	62·87	51·52	40·11	33·02	22·42	39·67
1865	13·06	17·00	29·23	40·55	48·78	62·75	61·13	59·64	58·22	39·48	34·61	24·20	40·71
1866	16·19	16·42	22·81	39·48	42·65	57·93	65·80	55·15	49·55	44·19	33·84	20·93	38·74
1867	14·37	24·85	21·60	36·50	41·91	61·83	61·47	59·77	52·88	42·48	34·04	18·29	39·17
1868	14·68	11·48	26·52	34·94	49·06	58·31	69·35	60·67	51·13	37·72	32·41	18·86	38·76
1869	24·32	21·02	16·68	35·37	47·17	54·15	60·94	59·76	53·24	37·25	28·49	25·04	38·62
Means	17·68	18·65	23·09	37·32	47·00	58·07	63·06	59·96	52·53	41·08	32·92	22·92	39·52

1 P. M.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year
	°	°	°	°	°	°	°	°	°	°	°	°	°
1861	22·19	26·86	30·67	46·96	51·53	68·76	71·72	70·27	62·09	54·42	37·76	34·75	48·16
1862	22·87	22·92	31·35	44·46	59·61	68·05	71·13	71·94	64·49	51·80	36·89	29·32	47·90
1863	29·43	24·58	29·25	48·11	61·71	65·71	71·41	70·58	61·32	48·45	40·90	27·79	48·27
1864	22·04	25·10	30·45	44·94	60·97	69·71	73·14	74·40	61·04	47·87	37·49	24·45	47·80
1865	18·20	24·93	37·28	48·70	59·50	72·93	70·21	71·28	69·92	47·41	39·88	27·08	48·99
1866	21·42	23·22	28·46	51·11	53·68	67·54	75·55	64·99	59·13	53·33	39·67	25·14	46·94
1867	18·71	30·46	28·85	44·88	49·84	72·05	72·04	73·28	63·56	54·93	39·70	23·55	47·65
1868	19·75	18·66	36·31	43·89	57·50	68·22	83·01	73·54	59·59	45·67	36·78	22·86	47·15
1869	28·75	26·67	25·37	44·11	55·86	62·89	68·91	69·29	65·15	44·48	33·98	28·62	46·16
Means	22·60	24·81	30·89	46·35	56·69	68·43	73·24	71·06	62·92	49·82	38·12	27·12	47·67

9 P. M.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year
	°	°	°	°	°	°	°	°	°	°	°	°	°
1861	17·03	24·95	26·76	41·10	44·59	59·85	63·54	61·61	54·71	48·21	32·78	31·57	42·23
1862	19·20	19·81	27·01	38·68	51·58	58·59	63·51	63·39	55·35	46·96	33·23	27·32	42·06
1863	26·86	21·98	23·90	40·76	53·42	56·65	63·63	61·52	52·21	42·68	37·38	24·18	42·10
1864	19·53	22·30	26·63	39·28	54·74	59·58	64·66	65·32	54·12	42·41	34·46	23·25	42·19
1865	15·75	21·17	33·68	43·89	51·21	64·09	62·82	62·76	61·80	42·00	36·05	23·51	43·23
1866	17·66	20·55	25·27	43·07	46·87	59·98	67·58	57·34	52·10	46·26	36·75	21·87	41·27
1867	17·07	28·30	24·47	39·48	43·61	63·74	63·81	63·54	54·04	46·63	35·24	20·89	41·73
1868	16·37	14·19	31·10	36·18	51·80	60·17	72·60	63·96	52·93	39·70	33·53	20·01	41·04
1869	25·55	23·50	20·37	38·95	49·91	56·94	63·62	61·87	57·25	38·57	29·87	26·33	41·06
Means	19·46	21·86	26·58	40·15	49·75	59·95	65·09	62·37	54·95	43·71	34·37	24·33	41·88

7 A. M, 1 P. M., AND 9 P. M., COMBINED.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year
	°	°	°	°	°	°	°	°	°	°	°	°	°
1861	18·57	24·56	26·77	42·04	46·59	62·33	65·94	64·02	56·47	49·06	34·37	31·66	43·53
1862	19·99	19·87	27·15	40·03	53·18	61·25	65·57	65·73	58·06	47·73	34·22	27·64	43·37
1863	27·20	21·70	24·89	42·04	55·32	59·42	65·70	63·97	54·28	43·53	37·67	24·54	43·35
1864	19·50	22·42	26·87	40·34	55·43	61·85	67·64	67·53	55·56	43·46	34·99	23·37	43·22
1865	15·67	1·04	33·40	44·37	53·16	66·59	64·72	64·53	63·31	42·97	36·85	25·13	44·31
1866	18·42	20·06	25·51	44·55	47·73	61·82	69·64	59·16	53·59	47·93	36·75	22·65	42·32
1867	16·72	27·87	24·97	40·29	45·12	65·87	65·77	65·53	56·83	48·01	36·33	20·91	42·85
1868	16·93	14·78	31·31	38·34	52·79	62·23	74·99	66·06	54·55	41·03	34·24	20·58	42·32
1869	26·21	23·70	20·81	39·48	50·98	57·99	64·49	63·61	58·55	40·10	30·78	26·66	41·96
Means	19·91	21·78	26·85	41·28	51·14	62·15	67·13	64·46	56·80	44·87	35·13	24·79	43·02

I may state that no observations were made in July, 1863 and 1864, in consequence of my absence from home; but I have been able to obtain approximate values for these months from a comparison with the records of the Observatory at Toronto, furnished to me by Prof. Kingston. The mode adopted is explained in the following investigation:

Let T be the mean temperature of eleven months (omitting July) at Toronto for a given hour; $\triangle$ the excess of the July temperature

above T; T_1 and $\triangle_1$ analogous quantities for Stratford. Then approximately $\frac{\triangle_1}{T_1} = \frac{\triangle}{T}$ and therefore $\triangle_1 = \frac{\triangle}{T} \times T_1$. $\triangle$ and T are known from the Toronto records, T_1 from Stratford, and therefore $\triangle_1$ is known approximately; consequently the July temperature for the specified hour $= T_1 + \triangle_1$ nearly. The observation hours at Toronto not being the same as at Stratford, the mean of 6 and 8 A.M. was used for 7 A.M., 2 P.M. for 1 P.M., and 10 for 9 P.M.

It is not strictly correct to assume that the above plan will give the true mean temperatures at Stratford for July, 1863–'64; but as the error in the nine-year mean will be probably small, the advantage of utilising the observations taken during the remaining months of these years will overbalance any slight departure from strict accuracy in the July temperatures.

From the nine years' mean for each hour, and for the three hours combined, the following formulæ are derived, in which t represents the temperature for that hour on any proposed day, and x an angle proportional to the number of days from January 15th:

7 A.M.

$$t = 39°.52 + 22°.46 \sin (x + 261° 25') + 1°.22 \sin (2x + 142° 0' + 0°.51 \sin (3x + 217° 47') + 0°.37 \sin (4x + 43° 55') + 1°.08 \sin (5x + 350° 58') - 0°.14 \cos 6x.$$

1 P.M.

$$t = 47°.67 + 25°.45 \sin (x + 263°.23) + 0°.21 \sin (2x + 119° 3') + 0°.25 \sin (3x + 182° 18') + 0°.38 \sin (4x + 60° 4') + 0°.95 \sin (5x + 357° 35') - 0°.26 \cos 6x$$

9 P.M.

$$t = 41°.88 + 22°.41 \sin (x + 262° 38') + 0°.52 \sin (2x + 137° 21') + 0°38 \sin (3x + 234° 38') + 0°.43 \sin (4x + 30° 44') + 0°.91 \sin (5x + 342° 45') - 0°.18 \cos 6x.$$

THREE-HOUR MEANS.

$$t = 43°.02 + 23°.44 \sin (x + 262° 31') + 0°.64 \sin (2x + 138° 49') + 0°.36 \sin (3x + 215° 55') + 0°.39 \sin (4x + 43° 57') + 0°.97 \sin (5x + 350° 32') - 0°.19 \cos 6x.$$

From these formulæ, tables have been constructed of the normal temperatures at the hours 7 A.M., 1 P.M., and 9 P.M., and of the normal means for the three hours combined. Of the four tables constructed, the latter only is here shown.

The following are the days when the maximum and minimum of each hour occurred :

	Maximum.		Minimum.	
	Day.	Temp.	Day.	Temp.
		°		°
7 A.M.	July 12.	63·1	Jan. 15.	17·7
1 P.M.	14.	73·2	10.	22·6
9 P.M.	15.	65·1	12.	19·5
Mean of three hours...	15.	67·1	15.	19.9

NORMAL DAILY MEANS OF TEMPERATURE AT STRATFORD, FROM OBSERVATIONS AT 7 A.M., 1 P.M., AND 9 P.M., IN THE YEARS 1861-'69.

Day	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	°	°	°	°	°	°	°	°	°	°	°	°
1	20·7	21·0	23·1	34·3	47·1	57·0	66·2	66·1	61·0	50·4	39·2	29·7
2	20·6	21·1	23·2	34·8	47·4	57·3	66·4	66·0	60·8	50·0	39·0	29·4
3	20·5	21·1	23·4	35·3	47·7	57·7	66·5	65·9	60·6	49·6	38·7	29·0
4	20·4	21·2	23·6	35·9	48·0	58·0	66·6	65·8	60·4	49·2	38·4	28·7
5	20·3	21·3	23·8	36·4	48·3	58·3	66·7	65·7	60·1	48·8	38·2	28·3
6	20·2	21·3	23·9	36·9	48·5	58·7	66·8	65·6	59·8	48·4	37·9	28·0
7	20·2	21·4	24·2	37·4	48·8	59·1	66·9	65·5	59·5	48·0	37·6	27·6
8	20·1	21·4	24·4	37·9	49·1	59·5	66·9	66·4	59·2	47·6	37·3	27·2
9	20·0	21·5	24·7	38·4	49·4	59·9	67·0	65·2	58·9	47·2	37·0	26·9
10	20·0	21·6	24·9	38·9	49·7	60·3	67·1	65·1	58·5	46·8	36·7	26·5
11	19·9	21·6	25·2	39·4	50·0	60·6	67·1	65·0	58·2	46·4	36·4	26·2
12	19·9	21·7	25·5	39·9	50·3	61·0	67·1	64·9	57·8	46·0	36·1	25·8
13	19·9	21·7	25·9	40·3	50·6	61·4	67·1	64·7	57·5	45·6	35·7	25·5
14	19·9	21·8	26·2	40·8	50·8	61·7	67·1	64·6	57·1	45·2	35·4	25·2
15	19·9	21·9	26·5	41·3	51·1	62·1	67·1	64·4	56·8	44·9	35·1	24·8
16	20·0	21·9	26·9	41·7	51·5	62·4	67·1	64·3	56·4	44·5	34·8	24·5
17	20·0	22·0	27·3	42·1	51·8	62·8	67·1	64·1	56·0	44·1	34·5	24·2
18	20·0	22·0	27·7	42·5	52·1	63·1	67·0	64·0	55·7	43·8	34·2	23·9
19	20·1	22·1	28·1	42·9	52·4	63·4	67·0	63·8	55·3	43·4	33·9	23·6
20	20·1	22·2	28·5	43·3	52·7	63·7	67·0	63·6	54·9	43·0	33·5	23·3
21	20·2	22·2	28·9	43·7	53·1	64·0	66·9	63·4	54·5	42·7	33·2	23·0
22	20·2	22·3	29·4	44·1	53·4	64·3	66·8	63·2	54·1	42·4	32·9	22·8
23	20·3	22·4	29·8	44·4	53·8	64·6	66·8	63·0	53·7	42·0	32·5	22·5
24	20·4	22·5	30·3	44·8	54·1	64·8	66·7	62·8	53·3	41·7	32·2	22·2
25	20·4	22·6	30·8	45·2	54·5	65·1	66·6	62·6	52·9	41·3	31·8	22·0
26	20·5	22·7	31·2	45·5	54·9	65·3	66·6	62·4	52·5	41·0	31·5	21·8
27	20·6	22·8	31·8	45·8	55·2	65·5	66·5	62·2	52·1	40·7	31·2	21·6
28	20·7	22·9	32·3	46·1	55·6	65·7	66·4	62·0	51·6	40·4	30·8	21·4
29	20·8		32·8	46·5	56·0	65·9	66·3	61·7	51·2	40·1	30·5	21·2
30	20·8		33·3	46·8	56·4	66·1	66·2	61·5	50 8	39·7	30·1	21·0
31	20·9		33·8		56·7		66·1	61·3		39·5		20·8

(To be continued.)

ON THE ANNUAL DISTRIBUTION OF TEMPERATURE AT TORONTO, IN THE YEARS 1859–'68.

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The normal temperatures employed as standards of reference in the Toronto tables to the end of 1868, and published in the *Canadian Journal*, were derived from the well known paper on the "Periodic and Non-periodic Variations of Temperature" published by General Sabine in the Philosophical Transactions for 1853. During and prior to the time when the observations were made on which Gen. Sabine based his conclusions (1841–'52), the mean temperature of January exceeded very decidedly the mean of February in other parts of North America as well as at Toronto. Testimony to this effect is given by Dove, in the remarks that accompany his isothermal charts, where he describes the isothermal lines as moving southwards from January to February.

Observations of later years, however, show a preponderance in the temperature of February.

At Isle Jesus (near Montreal),	1853–'62, Feb. was warmer than Jan. by..	3·4
Quebec.....	1860–'67, ...	3·6
St. John, New Brunswick	1861–'68, ...	3·6
Halifax.....	1867–'69, ...	2·3
Stratford, Ontario	1861–'69, ...	1·9
Toronto.....	1859–'68, ...	1·8

That the change in the time when the greatest cold occurs in Toronto has been a progressive change, is shown by comparing the means of January and February in groups of five years:

1841–'45, Jan. warmer than Feb. by	2·6	1856–'60, Jan. colder than Feb. by	0·3
1846–'50, " " " " "	2·6	1861–'65, " " " " "	1·5
1851–'55, " " " " "	0·9	1866–'69, " " " " "	2·1

Again, in addition to the change that has been noticed in the epoch of greatest cold, it appears further, as far as concerns Toronto, that the winters and springs have become to some extent colder, and the summers

and autumns warmer. Thus, comparing two sets of quarterly groups, separated by an interval of ten years, we have as follows:

	Winter.	Spring.	Summer.	Autumn.
	°	°	°	°
1841-'50.....	25·1	41·0	64·7	46·4
1861-'68.....	23·4	40·3	65·6	47·4
Change	—1·7	—0·7	+0·9	+1·0

The old tables of normals being thus manifestly inapplicable to the observations of recent years, I decided to construct new tables, and employed for the purpose the observations of the ten years 1859–'68, collected into monthly means for each of the six ordinary hours of observation, as shown in Table I.

TABLE I.

Monthly Mean Temperatures at Toronto, at each of the six ordinary hours of observation, derived from the ten years 1859 to 1868, inclusive.

Hour.	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	year
	°	°	°	°	°	°	°	°	°	°	°	°	°
2 P. M.	24·75	26·68	34·11	45·70	57·28	67·75	74·35	73·78	63·67	51·62	41·14	28·10	48·99
4 P. M.	24·30	26·63	34·05	45·55	57·10	67·52	74·17	72·42	63·07	50·77	40·09	27·22	48·57
10 P. M.....	21·36	23·25	29·54	39·32	49·50	58·72	64·85	63·23	55·44	44·96	36·76	24·55	42·63
Midt.....	20·74	22·67	28·46	38·33	48·06	57·16	63·40	61·72	54·02	44·03	36·16	23·86	41·55
6 A. M.	19·60	20·69	26·14	36·31	47·45	57·38	63·01	60·34	52·25	42·42	35·19	23·26	40·34
8 A. M.	19·66	21·15	28·00	39·65	51·62	61·90	68·00	65·85	56·93	45·03	35·99	23·23	43·08
Mean.....	21·74	23·51	30·05	40·81	51·84	61·74	67·96	66·06	57·56	46·47	37·56	25·04	44·19

Taking each hour separately, and adopting in the first instance the ordinary hypothesis that the monthly means represent the temperatures proper to the middle days of the respective months, six formulæ were constructed of the form:

$T_n = T_0 + T_1 \sin(n \times 30^\circ + C_1) + T_2 \sin(2n \times 30^\circ + C_2) +$ &c.&c. $T_6 \cos 6n \times 30^\circ$;

the January mean being the temperature corresponding to the 15th of January, regarded as the origin or zero of time; T_n the temperature at the time (n), the unit of time being the twelfth part of a year; and $T_0, T_1, \ldots T_6$; $C_1, C_2, \ldots C_5$ constants derived from the twelve monthly means.

The value of these constants are as follows:

	T_0	T_1	T_2	T_3	T_4	T_5	T_6	C_1	C_2	C_3	C_4	C_5
	°	°	°	°	°	°	°	° ′	° ′	° ′	° ′	° ′
2 P. M.	48·99	24·70	0·48	0·66	0·62	0·51	0·22	261 57	27 18	262 17	10 10	36 0
4 P. M.	38·57	24·76	0·69	0·64	0.65	0·49	0·22	262 54	27 19	265 59	11 36	34 40
10 P.M.	42·63	21·43	0·33	0·80	0·66	0·52	0·29	261 7	36 33	267 50	359 8	26 13
Midt..	41·55	20·95	0·30	0·87	0·74	8·58	0.26	260 40	38 39	269 28	5 25	21 9
6 A. M.	40·34	21·36	0·89	0·85	0·67	0·56	0·27	260 38	128 31	276 35	359 9	22 56
8 A. M.	43·08	24·03	0·48	0·64	0·66	0·58	0·28	262 4	104 11	160 16	0	26 34

The accuracy of the computation of each formula being tested by the reproduction of the twelve monthly means on the substitution of 0, 1, 2, &c., 11, for (n); the differences (disregarding sign,) between the actual

means and those given by the formulæ having an average value of ·01, and in no instance exceeding .02, the coefficients T_1, T_2, &c., were then modified by applying corrections made necessary by the erroneous assumption that the means of each month are the temperatures proper to their middle days.

The modified coefficients are given below:

	T_1	T_2	T_3	T_4	T_5
	°	°	°	°	°
2 P. M.	24·98	0·50	0·73	0·75	0·69
4 P. M.	25·04	0·72	0·71	0·79	0·65
10 P. M.	21·68	0·35	0·89	0·80	0·70
Midt.	21·19	0·31	0·97	0·89	0·79
6 A. M.	21·61	0·93	0·94	0·81	0·76
8 A. M.	24·31	0·50	0·71	0·80	0·79

The temperatures for every day in the year, computed from the six modified formulæ, have been employed as normals or standards, with which to compare the observations at the ordinary hours since January 1869 inclusive, the averages of the six normals on each day being taken as the normal daily means referred to in the monthly tables in the *Canadian Journal*. The normal daily means are given to tenths in Table II.

TABLE II.

Normal Daily Means of Temperature at Toronto, from six daily observations in the ten years 1859 to 1868, inclusive.

Day.	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	ept.	Oct.	Nov.	Dec.	Day
	°	°	°	°	°	°	°	°	°	°	°	°	
1	21·3	22.6	25.6	35.6	46.8	57·5	66.3	68·1	62·5	51.0	42·2	30·5	1
2	21·3	22.6	25.8	36.0	47.2	57·8	66.5	68·0	62·2	50.6	41·9	30·0	2
3	21·3	22.7	26.0	36.4	47.6	58·1	66.7	67·9	62·0	50.2	41·7	29·6	3
4	21·2	22.7	26.3	36.7	47.9	58·4	66.9	67·9	61·7	49.9	41·4	29·1	4
5	21·2	22.8	26.5	37.1	48.3	58·8	67.1	67·8	61·4	49.5	41·2	28·6	5
6	21·2	22.8	26.8	37.5	48.6	59·1	67.2	67·7	61·1	49.2	40·9	28·2	6
7	21·2	22.9	27.0	37.9	49.0	59·4	67.4	67·6	60·7	48.8	40·6	27·7	7
8	21·2	23.0	27.3	38.3	49.3	59·7	67.5	67·4	60·4	48.5	40·3	27·3	8
9	21·2	23·0	27.6	38.7	49.7	60·0	67.7	67·3	60·0	48.1	40·0	26·9	9
10	21·3	23.1	27.9	39.0	50.0	60·4	67.8	67·2	59·6	47.8	39·7	26·4	10
11	21·3	23.2	28.2	39.4	50.4	60·7	67.9	67·0	59·2	47.5	39·3	26·0	11
12	21·4	23.2	28.5	39.8	50.7	61·0	68·0	66·9	58·8	47.2	39·0	25·6	12
13	21·4	23.3	28.8	40.2	51.1	61·3	68.1	66·7	58·4	46.9	38·6	25·3	13
14	21·4	23.4	29.1	40.6	51.4	61·7	68·2	66·6	58·0	46.6	38·2	24·9	14
15	21·5	23.5	29.4	40.9	51.8	62·0	68·2	66·4	57·6	46.3	37·8	24·6	15
16	21·6	23.6	29.7	41.3	52.1	62·3	68·3	66·3	57·2	46.1	37·4	24·2	16
17	21·6	23.7	30.1	41.7	52.5	62·6	68·3	66·1	56·8	45.8	37·0	23·9	17
18	21·7	23.8	30.4	42.1	52.8	62·9	68·4	65·9	56·4	45.5	36·6	23·6	18
19	21·7	23.9	30.8	42.4	53.2	63·2	68·4	65·7	56·0	45.3	36·2	23·3	19
20	21·8	24.0	31.1	42.8	53.5	63·5	68·4	65·5	55·5	45.0	35·7	33·1	20
21	21·9	24.2	31.5	43.2	53.9	63·8	68·4	65·3	55·1	44.8	35·3	22·8	21
22	21·9	24.3	31.8	43.6	54.2	64·1	68·5	65·1	54·7	44.5	34·8	22·6	22
23	22·0	24.5	32.2	43.9	54.6	64·4	68·4	64·8	54·3	44.3	34·4	22·4	23
24	22·1	24.6	32.6	44.3	54.9	64·6	68·4	64·6	53·8	44.0	33·9	22·2	24
25	22·1	24.8	32.9	44.7	55.2	64·9	68·4	64·4	53·4	43.8	33·4	22·0	25
26	22·2	25.0	33.3	45.0	55.6	65·2	68·4	64·1	53·0	43.6	32·9	21·9	26
27	22·2	25.2	33.7	45.4	55.9	65·4	68·3	63·8	52·6	43.3	32·5	21·7	27
28	22·3	25.4	34·1	45.7	56.2	65·6	68·3	63·6	52·2	43.1	32·0	21·6	28
29	22·4		34·4	46.1	56.5	65·9	68·2	63·3	51·8	42·9	31·5	21·5	29
30	22·4		34·8	46.5	56.9	66·1	68·2	63·1	51·4	42·6	31·0	21·4	30
31	22·5		35·2		57·2		68·1	62·8		42·4		21·4	31

The days when the temperature attains its extreme and mean values for each hour, and the values of the maxima and minima are shown in the following table:

	Minima.		Spring Mean.	Maxima.		Autumn Mean.
	Day.	Temp.	Day.	Day.	Temp.	Day.
		°			°	
2 P. M.	Jan. 7.	24·3	April 23.	July 25.	75·0	Oct. 23.
4 P. M.	5.	23·7	22.	24.	74·8	22.
10 P. M.	6.	20·8	21.	23.	65·4	25.
Midt.	5.	20·1	24.	22.	63·9	26.
6 A. M.	8.	19·2	26.	18.	63·3	25.
8 A. M.	7.	19·2	23.	21.	68·4	22.
Six hours.	6.	21·2	24.	22.	68·5	23.

In order to show better the position of the principal epochs in the annual period in former and in later years, I have drawn up in tabular form a comparative view of the times of occurrence of the extreme and mean values of the normal daily means, and of the maximum and minimum values of the normal daily means at Toronto in the years 1841–'52, and in 1859–'68, and at Stratford in the years 1861–'69.*

	Minima.		Spring Mean.	Maxima.		Autumn Mean.
	Day.	Temp.	Day.	Day.	Temp.	Day.
		°			°	
Toronto, 1841-'52....	Feb. 14.	23·4	April 19.	July 28.	66·9	Oct. 15.
Toronto, 1859-'68....	Jan. 6.	21·2	24.	22.	68·5	23.
Stratford, 1861-'69 ..	15.	19·9	19.	15.	67·1	20.

I propose next to enquire as to the extent to which any modification has occurred in the probable *variability* of the daily and monthly means of temperature, and also in the times when a departure of the actual from the normal daily means is found systematically to prevail.

These points will be considered in another paper.

* Note.—I am indebted to Mr. C. J. Macgregor for the particulars relating to Stratford.

A TABLE,

FOR CALCULATING THE WEIGHT AND YIELD, PER RUNNING FATHOM, OF MINERAL VEINS.

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The weight in tons and average richness of mineral veins are usually given per running fathom: that is, per parallelogram measuring six feet in length, and six feet in depth, by the mean width of the vein, whatever the latter may be. The following table will enable these results to be calculated very rapidly, provided the specific gravity of the vein matter (mixed ore and gangue), and the average per-centage of metal or mineral carried by the vein, be previously ascertained. The table has been calculated on the supposition that the sp. gr. equals unity, and that the average yield in metal is equivalent to one per cent. The values given in columns III. and IV. must thus be multiplied by the sp. gr. of the vein matter; and those given in column V. must be multiplied also by this quantity, and the resulting product must finally be multiplied by the average per-centage of metal or mineral as ascertained by estimate or by actual assay. The values in column V. correspond to both the British ton of 2,240 lbs., and the American ton (chiefly used in Canada) of 2,000 lbs. Where the width of the vein is in feet and inches, the values of the two, as given in the table, must of course be added together.

Example.—A vein averages 3 feet in width, with sp. gr. equal to 3·8, and per-centage of metal equal to 2·6. Required the weight in British and American tons, and the yield (exclusive of loss in mechanical and furnace treatment) per running fathom.

8 tons (see the Table) $\times$ 3·8 $-$ 11$\frac{1}{2}$ British tons (nearly).
3·36 tons (see the Table) $\times$ 3·8 $=$ 12$\frac{3}{4}$ American tons.
67·30 lbs. (see the Table) $\times$ 3·8 $\times$ 2·6 $=$ 665 lbs.

Each fathom, therefore, of a vein of this strength, will contain 108

cubic feet; will weigh 11½ British, and 12¾ American tons; and will carry 665 lbs. of metal.

I.		II.	III.	IV.	V.
Width of Vein.		Contents in Cubic Feet per Fathom.	Weight in English Tons (2,240 lbs.) per Fathom.	Weight in American Tons (2,000 lbs.) per Fathom.	Amount of Metal in lbs. av. per Fathom.
Feet.	Inches.				
	1	3	0·0833	0·0933	1·87
	2	6	0·1666	0·1866	3·74
	3	9	0·2500	0·2800	5·61
	4	12	0·3333	0·3733	7·48
	5	15	0·4166	0·4666	9·35
	6	18	0·5000	0·5600	11·22
	7	21	0·5833	0·6533	13·09
	8	24	0·6666	0·7466	14·96
	9	27	0·7500	0·8400	16·83
	10	30	0·8333	0·9333	18·70
	11	33	0·9166	1·0266	20·57
1	..	36	1 ton.	1·12	22·43
2	..	32	2 "	2·24	44·87
3	..	108	3 "	3·36	67·30
4	..	144	4 "	4·48	89·74
5	..	180	5 "	5·60	112·17
6	..	216	6 "	6·73	134·61
7	..	252	7 "	7·84	157·04
8	..	288	8 "	8·96	179·48
9	..	324	9 "	10·08	201·92
10	..	360	10 "	11·20	224·35

REVIEWS.

ALASKA AND ITS RESOURCES. By WILLIAM H. DALL, Director of the Scientific Corps of the late Western Union Telegraph Expedition. Boston: Lee & Shepard, 1870.

There lies on the extreme north-western region of the North American continent an isolated tract of country, bounded on three of its sides by the Arctic and North Pacific Oceans and Behring Straits, and on its fourth by an imaginary geographical parallel separating it from British North America. Until little more than three years ago this region figured on our atlases—as on all but the very newest it still does,—as Russian America. But it attracted no attention; and the details of its geographical features or physical characteristics were, for the most part, little better defined than those around Baffin's Bay or Barrow Straits.

The progress of modern science, stimulated to fresh enterprise by international rivalry, has had its share in bringing this *terra incognita* under survey, and reducing to some trustworthy extent of detail the facts pertaining to its physical geography and aboriginal inhabitants. In 1858 the first submarine Atlantic Telegraph was successfully laid; and though the rejoicings at its accomplishment were speedily arrested, and the derangement of its continuity rendered necessary the reconstruction of the whole costly work: nevertheless the practicability of the enterprise was demonstrated beyond all doubt, and the success which has since so triumphantly crowned this noble enterprise was anticipated as only a question of time. Meanwhile, in remote San Francisco, relations had been established with Russian America, chiefly with a view to secure a monopoly of its ice trade: when, in 1864, the idea was started of constructing a telegraph line from San Francisco to Behring Strait, crossing that Arctic channel by a submarine cable, and thence by overland line to meet the Russian government telegraph, already carried to the mouth of the Amoor River. The Western Union Telegraph Expedition was accordingly inaugurated in the following year on a creditable scale; and indeed with a complement of semi-military commissions, uniforms, flags, and badges, very unusual in any peaceful scientific exploration. Happily those showy adornments, incident to the recent military experiences of the United States, were

compatible with the intelligent liberality, which added to the expedition an astronomer, naturalist, artistic draftsman, &c. Major R. Kennicott, an experienced Arctic explorer and naturalist, undertook the exploration of the Yukon region; and on his death, in 1866, in consequence of excessive privations and hardships incident to his labours, the author of the volume now under review assumed the vacant post of director of the scientific corps, and prosecuted the work, so far, to a successful issue.

Mr. William Healey Dall is even now only entering on his career though he has already achieved such substantial results. We remember him not many years ago, as an intelligent boy, quiet and thoughtful in his ways, already manifesting a taste for natural history, and a love for reading of all sorts. He was then resident in Toronto. His education has since been completed at Boston, and the special scientific studies which fitted him for the work he has recently brought to a termination, were carried on chiefly under the direction of Professor Agassiz, at Harvard. The Western Telegraph Company, in the service of which his labours were undertaken, proved a failure, and after expending nearly three millions of dollars, the telegraphic project had to be abandoned. The route for the proposed line was ill chosen, and in spite of remonstrances on the part of Mr. Kennicott, was persistently adhered to. Mr. Dall remarks, "Had it been over the well trodden paths from St. Paul, Minnesota, through the Hudson Bay Territory, to Fort Yukon, there is reason to believe that the line might have been built at a less cost than the amount wasted on the west coast, in the mountainous regions and dense forests of British Columbia." But while as a commercial speculation the enterprise led to total failure, the liberal policy of the Directors in the organization of the expedition has prevented its proving barren of results. Much geographical and scientific information has been procured by its means, and the observations thus made in this novel field of research are accurately recorded in the large and handsome volume now referred to.

No doubt the project helped, with other causes then in operation, to draw attention to the hitherto unheeded region. In the same year in which Major Kennicott died, negotiations were entered into for the purchase of Russian America. Mr. Dall states, without vouching for the truth of the story, that a company of American citizens applied to Mr. Seward to assist them in purchasing the country to carry on a fish, fur, and timber trade, and that he, finding Russia willing to sell,

secured the territory, not for the private company, but for the nation. If the country was to pass from the possession of Russia it must needs be transferred to some other recognized government, unless it were to be organized into an independent state. The idea of an American trading company holding it as a possession foreign to the United States of which they were citizens, would have developed novel relations, requiring an entirely new chapter in international law. If such an idea was ever entertained, the projected company no doubt discovered that they could exercise no more absolute lordship than that which the fur traders of the neighbouring Hudson Bay territory have so long done under the supremacy of the British crown. Hence the necessity of applying to the American Secretary of State, whose official correspondence relative to the transfer of Alaska from "His Majesty the Emperor of all the Russias," is printed here in amplest detail. The acquisition was regarded for a time by the American press as one of Mr. Seward's most sagacious feats of statesmanship; and when, after a little, this had been dwelt upon with characteristic laudation, American writers ran to an opposite extreme; and the worthlessness of "Walrussia," as it was jestingly styled, with its boundless ice-fields, sea-lions, walruses, and polar bears, became a favourite theme for the satirists of the political press. Mr. Dall discusses the value of Alaska to the United States as a territorial acquisition, and does his best to demolish such unpatriotic satirists. He will no doubt find no lack of sympathy with vaticinations so much more accordant with the wonted tone of American writers, when aiming at forecasting their national future.

"I have seen," says Mr. Dall, "with surprise and regret, that men whose forefathers wielded the axe in the forests of Maine, or gathered scanty crops on the granite hill-sides of Massachusetts, have seen fit to throw contempt and derision on the acquisition of a great territory, naturally far richer than that in which they themselves originated, principally on the ground that it is a *cold* country." To this complaint he makes indignant response, and then proceeds; "Two hundred and fifty years hence there may be a New England where there is now a trackless forest. The time may come when we shall call on our Pacific fishermen to man our fleets; on the lumbermen of Alaska and our hardy northern trappers to don the blue, and strike another blow for unity and freedom." With all the bloody horrors of Saarbruck and Woerth, Wiesenburg, Gravelotte, Forbach, and Sedan, fresh in our

minds, we would fain hope that the next two hundred and fifty years have something better in store for that coming time than chassepots and mitrailleurs; that the fleets of the future will really be manned by "pacific fishermen," and its armies marshalled to contend only with the unhewn forests and the unmined wealth of regions that invite to such peaceful conquests. The visions of science, at any rate, more readily accord with such aspirations; and its devotees—though enlisted for a time in the service of war,—flatter themselves that the very perfection of its destructive implements which science is now achieving is accelerating the time when men shall leave war to the savage and the brute. Not in our time assuredly is that happy day to dawn; but science is even now helping

> "To drill the raw world for the march of mind,
> Till crowds at length be sane and crowns be just!"

Meanwhile his mind must be cast in a narrow mould who cannot sympathise with the youthful ardour of our author; as he tips his pencil with rainbow hues, and pictures the brightest future for a region he has made so peculiarly his own. We may leave to the men of two and a half centuries hence to judge of its truthfulness, while we content ourselves in the belief that the world at large can scarcely fail to be benefited by the transfer of this great storehouse of fish, timber and fur, undoubtedly of ice, probably also of mineral wealth, to an enterprising people favourably situated for turning its resources to the best account.

Mr. Dall's volume is less a narrative of travel through scenes rich with strange revelations of wild tribes and a still wilder region, than a journal of personal experiences, and a careful accumulation of all that could be gleaned relating to the geography, history, natural products, and fauna, of this new country, alike from his own observation and from old maps, journals, voyages, books of travel, and all other accessible sources. A journey pursued under the restraints necessarily pertaining to the commission entrusted to this exploring party, precluded much of the adventure which gives a popular charm to the ordinary traveller or hunter's story. Nevertheless there is material enough in this volume to have been wrought up into a sufficiently attractive narrative for the shelves of the lending library had such been the author's aim. He has preferred a different course; and if his columns of statistics, lists of natural history, comparative vocabularies,

or pages of chronological annals and official correspondence, repel some of the ordinary class of readers, they will tempt others to study his volume long after works of more immediate popularity have been forgotten. It embodies the fruits of labour and research, the amount of which can only be fully appreciated by those who have themselves undertaken to gather, classify, and present in an accessible shape, like comprehensive data about a region hitherto visited chiefly by the rude trapper or seal-hunter.

The account of the Eskimo and Indian tribes of Alaska supplies many curious details; and this, as well as other departments, is illustrated by careful drawings. Here, for example, we have the subterranean dwelling, or *topek*, of the Unalects, a tribe of the great Innuit family inhabiting the coasts. These topeks are built almost entirely underground, "with the entrance more or less so, and the roof furnished with a square opening in the centre for the escape of smoke and admission of light. They are built of spruce logs, without nails or pins, and are usually about twelve or fifteen feet square. The entrance is a small hole, through which one must enter on hands and knees, and is usually furnished with a bear or deer skin, or a piece of matting to exclude the air. Outside of this entrance is a passage-way, hardly larger, which opens under a small shed at the surface of the ground, to protect it from the weather." This timber underground dwelling of the Unaleets presents a striking analogy to the more durable Weem of the prehistoric savage of North Britain. They belong to a people in the very same primitive stage; for the accumulated midden heaps of the latter disclose the bones of the whale, along with the edible molusks of the neighbouring coast, and implements of flint and bone not less rude than any which Mr. Dall depicts in illustration of the infantile native arts of Alaska.

Mr. Dall draws attention to other interesting illustrations of the close analogies between primitive and modern savage arts. He remarks, for example, on page 237, "The Innuit have a custom of making, on flat pieces of bone, rude drawings of animals, hunting parties, and similar things. These drawings are analogous to those discovered in France in the caves of Dordogne, and the preceding sketch of the drawings on either side of two bone knives, illustrates their general character." The illustrations referred to exhibit a native in his kyak spearing a goose; a deer hunt; wolves in pursuit of deer; and apparently a native dance. But while these examples are highly curious as illustrations of

the imitative faculty so characteristic of the natives of the new world, they present in their rudeness a very marked contrast to the artistic skill of the prehistoric cave dwellers of the Dordogne valley and other similar French sites of primeval art. The famous etching on a plate of ivory of the mammoth, for example, found by M. Lartet, when in company with M. Verneuil and the late Dr. Falconer, in the Perigord caverns, is characterised by a graphic vigour and freedom of touch that would do no discredit to the pencil of Rosa Bonheur.

Mr. Dall further adds, "I have seen an ivory bow, used in connection with a drill, and made of an entire walrus tusk, which had depicted on each of the four sides every pursuit followed by the Innuit from birth to interment. These facts have a peculiar interest, as showing some similarity between the customs of the present Orarian tribes and those of the ancient European cave-dwellers. Similar drawings are common everywhere among the Innuit, while I have never seen among the Tinneh tribes of the northwest any similar specimens of art." The term "Orarian" here used, we may as well explain, is a new generic term designed to embrace in one group all the tribes of Eskimo stock, and thus distinguish the Innuit, Aleutians, Asiatic Eskimo, as well as those of Greenland and Davis Straits, from the Red Indian stock. They are the coastmen (*l. ora*) of the Arctic world.

The skin-canoes of diverse forms, so characteristic of the Arctic fisherman, are illustrated by careful drawings; and exhibit the practical ingenuity of the native boat-builders in some of its most striking aspects. They are of three kinds, including one adapted by the Russians from the Aleutian Kyak. "One is a large open boat, flat-bottomed, and consisting of a wooden frame tied with sealskin thongs, or *rémni*, and with the skins of the seal properly prepared, oiled, and sewed together, stretched over this frame and held in place by Walrus-skin line, or *máhout*. This kind of boat is known among all the Innuit by the name *oómiak*, and is called a *bidarrá* by the Russians. Another, a smaller boat, for one man, is made essentially in the same way, but covered completely over, except a hole in which the occupant sits, and around the projecting rim of which, when at sea, he ties the edge of a water-proof shirt, called a *kamláyka* by the Russians. This is securely tied around the wrists and face also, the head being covered by a hood, so that no water can by any means penetrate to the interior of the boat." This *kyak*, as it is called by the natives of the western coast, has long been familiar to us by its use among the Greenland Esqui-

maux, and attracted the attention of Dr. Pickering, when in use by the Aleutian Islanders, as so perfectly adapted to the requirements of the Arctic fisherman, that "it seemed almost to enable man to take a place among the proper inhabitants of the deep."

It is altogether beyond the compass of our limited space to follow the author in his elaborate geographical, chronological, geological, and natural history details, extending in all to 628 closely printed pages. But a few characteristic extracts may serve to show our readers the value of this repertory of novel facts in these varied departments of research. Whilst in the Yukon territory he remarks (page 19), "our attention was attracted by the numerous graves. These are well worth the careful attention of the ethnologist; many of them are very old. The usual fashion is to place the body, doubled up, on its side, in a box of plank hewed out of spruce logs and about four feet long; this is elevated several feet above the ground on four posts, which project above the coffin or box. The sides are often painted with red chalk, in figures of fur-animals, birds and fishes. According to the wealth of the dead man, a number of articles which belonged to him are attached to the coffin or strewed around it. Some of them have kyaks, bows and arrows, hunting implements, snow-shoes, or even kettles, around the grave or fastened to it; and almost invariably the wooden dish or *kantag*, from which the deceased was accustomed to eat, is hung on one of the posts. There are many more graves than present inhabitants of the village, and the story is that the whole coast was once much more densely populated." The same evidences of a decreasing Eskimo population have been recorded by Kane and other explorers as still more noticeable on the eastern coast, and these, along with the decline and ultimate destruction of the ancient Scandinavian colonies of Greenland, have been supposed by some writers to point to a gradually increasing severity of climate throughout the whole Arctic circle.

Inhospitable, however, as the whole Yukon region is, it has its charms for its own children, as that "land, of every land, the pride," not less keenly appreciated by them than by those of earth's most favored spots. They call themselves, in proud pre-eminence, the *men of Yuhen;* and as for the Yukon boys, they would appear, according to Mr. Dall's account, to enjoy a more enviable lot even than the children of that republican Paradise where, according to some authorities, the repeal of the fifth commandment has been enacted by juvenile acclamation. Writing up his journal on the 29th of April, he says: "The weather

has become exceedingly warm, and the little children enjoyed themselves on the broad river-beach, building houses with pebbles and making mud pies, much as their brothers and sisters do all over the world when a vacation or a holiday releases them from restraint and the mother's watchful eye. I never saw a young child punished in Russian America, except the well-grown boys of the Russian bidárshik. They behave quite as well as civilized children, and grow up with quite as much respect for their parents. An Indian baby, unless sick, never cries, and why should it? It has no one to rub soap in its eyes, and never feels the weight of the parental hand. The mother makes it a doll, if a girl, out of bits of squirrel skin and fur. If a boy the father builds for him a little sable trap, a miniature cache, in which to put his shining pebbles and other childish treasures, or a tiny fishtrap in which the mother takes care that a choice bit of ukali, a rabbit's head, or a piece of reindeer fat, shall be caught in some mysterious way. As soon as they can toddle about they are instructed in the mysteries of setting snares, and the pride with which the boys or girls bring home their first grouse, or even by great good luck an unfortunate rabbit, is fully shared by the parents. Their dresses are ornamented with the choicest beads; the sweet marrow or tongue of the fallen reindeer is reserved for them by the father successful in the chase. They travel hundreds of miles with the dog-sleds, and from these little children I have often obtained dozens of mice or small birds, caught near some solitary lodge far away among the mountains, which rumor had informed them I would purchase with beads or trinkets. They carried these proudly home again as their own earnings and the prize of their own industry. I always paid something for such specimens, even if quite worthless, to encourage them to perseverance, and in this way I obtained many invaluable specimens."

In addition to numerous interesting notes of personal observation, such as those produced here, scattered through Mr. Dall's journal of travels on the Yukon, and in the Yukon territory, to which the six chapters of Part I. are devoted: he takes up, in Part II. the geography, history, inhabitants, and resources of Alaska, resorting for information on those subjects to all available sources, of which a numerous list of works, including those of Russian and other early explorers, is furnished in the appendix. To every one, therefore, interested in any branch of the subject this volume furnishes a ready digest of nearly all available information.

Some of the brief extracts given above suffice to show the attractive glimpses of ingenuity and artistic skill which it discloses among the rude tribes of Alaska. Of these the Thlinkets comprise various tribes, such as the Ahimsyans, the Haidahs, the Koloshes, and the Yakutats: all noted by earlier explorers for their talent as carvers in wood and bone. They also work in native copper, and covet silver and other white metals, preferring them to brass or gold. The following account of their religious ideas will illustrate still more curiously the mental and moral characteristics of the native tribes of the northwest. "The Thlinkets do not believe in a Supreme Being, for good or evil. Their feeble polytheism presents no features worthy of the name of religious belief. Yehl, or Yayhl, is the maker of woods and waters. He put the sun, moon and stars in their places. He lives in the east, near the head waters of the Nasse River, whence the Thlinkets say they originally came." The Thlinket narrative of the creation, or the mundane revelation of the heavenly bodies, is embodied in the following myth: "There was a time when men groped in the dark in search of the world. At that time a Thlinket lived who had a wife and sister. He loved the former so much that he did not permit her to work. She sat the whole day doing nothing. Eight little red birds, called *kun* by the Thlinkets, were always around her. One day she spoke to a stranger. The little birds flew and told the jealous husband. So when he went into the woods to build a canoe he shut her up in a box. He killed all his sister's children because they looked at his wife. Weeping, the mother went to the sea shore. A whale saw her and asked the cause of her grief, and when informed, told her to swallow a small stone from the beach and drink some sea-water. In eight months she had a son, whom she hid from her brother. This son was really Yehl. As he grew he became a great expert in shooting with a bow and arrow. It is said the mother made herself a mantle out of the skins of humming-birds which he had brought down. He killed birds of large size, and dressing himself in their skins, flew about to different places, having many adventures.

"The only one worth relating is the most glorious of his deeds, that of putting the light in its place. At that time the sun, moon and stars were kept by a rich chief in separate boxes, which he allowed no one to touch. Yehl heard of it and desired to have them. This chief had an only daughter, whom he loved and spoiled to such a degree, that he examined everything she ate and drank before he would allow

her to partake. Yehl saw that only a grandson of the old chief could obtain the light, and in the form of a blade of grass he was swallowed, and made his next appearance in that character, and was soon beloved even more than his mother. Once Yehl commenced weeping and nothing would appease him but the boxes in which the luminaries were kept. After a long siege of crying the grandfather gave him one of the boxes to pacify him, and he went out of the house playing with it. Seeing he was not observed, he opened the box, and lo! there were stars in the sky. Great were the lamentations of the old man over the loss of his treasure, but he loved his grandson too well to scold him, and actually permitted himself to be cheated out of the moon in the same way. But with the box containing the sun he was more careful, and only after refusing food, and making himself sick, did Yehl succeed in imposing on the affectionate old man. That was finally given to him, with the strict injunction not to open it. But, turning himself into a raven, he flew away with it, and on opening the box light shone on the earth as it does now. But the people astonished by the unwonted glare, ran off into the mountains, woods, and even into the water, becoming animals or fish."

To this same creative power, Yehl, is ascribed the great gift of fire, which he is said to have brought from an island in the Ocean. But we have produced enough to show the value of the volume as a contribution to ethnology. The comparative philologist will find fresh materials for study in the classified vocabularies of various tribes; and the naturalist is furnished with copious lists of mammalia, marine and fresh-water fishes, birds, insects, and plants, many of them new to science. Last of all, the practical reader will find attractions suited to his tastes in its details of the geology and mineral resources of the region; of its fishery and fur trade; its hides, oil, and walrus ivory, with other marketable materials, such as the whiskers of the sea-lion—as large as a quill, and sometimes fifteen inches long,—which are transported to China, and there find a ready sale: the Chinese paying a high price for them to use as toothpicks.

But we have said enough to commend the book to all readers capable of appreciating its additions to our knowledge in various departments of the wide field thrown open to the well-trained eye of a competent observer entrusted with the scientific exploration of new regions. Its author is now engaged as one of the staff of the Smithsonian Institution at Washington, and will no doubt invite our attention hereafter by other contributions in his favourite branches of study. D. W.

THE PROPHECY OF MERLIN, and other Poems. By JOHN READE. Montreal: Dawson Brothers, 1870.

In every age characterised by special literary vigour, the leaders of thought are seen to find a school of followers to whom their productions give law. So was it when Pope was the ruling power; when Scott's lays revived the romantic epic of Spenser; or when Byron for a time won all ears to his musical verse. Now the Poet Laureate rules supreme wherever poetry commands an appreciative audience, and the echos of his rich music are readily traced in the notes of our minor poets. It is no slight, however, on a poet to rank him as pertaining to the school of which the living master of song is the recognised head; and it is with no purpose of disparagement that we trace, not merely in the theme of the chief piece in the volume of poems, the title of which heads this article, but also in its forms of versification and modes of thought: evidences of training in the school of Tennyson. As such, were the volume issued from the English press, it would present no special claims on the attention of a Canadian literary journal; but as a poet issuing his work from the Canadian press, Mr. Reade may claim some critical notice at our hands.

Literature as yet is necessarily one of the rarer products of our young country; but we are not on that account prepared to welcome any commonplace production of a provincial versifier, as though mediocrity acquired a higher value in the colonial dependency than in the mother land. We are, indeed, perhaps prone to under-estimate our native literary productions, as presumably inferior to those begot in the great centres of intellectual vitality.

Governed by old-world principles and canons of taste, we are as speedily nauseated here, as persons of discernment are in any other region of the world, by volumes issuing from the press, presenting to the eye page after page of fair typography duly arranged and subdivided, indicating here long stretches of epic narrative, and there cantos, strophes, and fragmentary stanzas in every variety of prosodiacal metre; but all of which, when tested as vehicles of ideas intended to delight the human fancy or intellect, are found to be mere shapes and forms; like Gratiano's talk, amounting to "an infinite deal of nothing"—hiding, it may be, in whole bushels of chaff, a few grains of wheat, not worth the search when you have found them.

It is because the little volume whose title appears above is decidedly

not of the disappointing class to which so much that offers to the eye the semblance of poetry belongs, that we have taken the trouble to select a few specimens of its contents. We have referred to a clear recognition of Tennysonian models both in subject and forms of versification. As to the former, it is impossible to read of Sir Bedivere and Arthur, of Avalon, and—

> "Camelot, and the sweet fellowship
> Of noble knights and true, and beauteous dames
> Who have no peers in all the living world;"

and make no comparison with the "Idyls" which have recalled to our generation "the blameless king" and the knights of his hall. But also we have the most characteristic of Tennyson's favourite metres. Here, for example, in the piece entitled "Shakspere, April 23rd, 1864," is the peculiar arrangement of quatrains so familiar to every reader of "In Memoriam," but missing to a great extent the special beauty of that verse as handled by Tennyson. Mr. Reade thus writes for the anniversary of the birthday of England's great dramatist:—

> "And singing thus, he passed his days—
> Not without honour, it is true—
> Yet hardly understood by few;
> And these were slow in giving praise.
>
> And men had lived in mist so long,
> Some could not bear his blaze of light;
> But shut their eyes, and said 'twas night,
> When it was just the noon of song.
>
> But when his soul shook off its clay,
> And hied, its labour done, to God,
> Throughout the land that he had trod
> 'Twas felt: 'A king has died to-day!'"

The idea is not inexpressively set, but the fine characteristic of this quatrain arrangement, in the Laureate's verse, is that it does not develop into a series of four-line stanzas, but flows over and interlinks in continuous music, partaking rather of some characteristics of the Terza Rima.

We are led, in passing, to ask what tempts our Canadian poet to adopt the whim of an English antiquary and critic in his spelling of Shakespeare's name? Mr. Charles Knight discovered, or fancied he discovered, in the deciphering of one of his autographs, the form of *Shakspere*, adopted by him in his edition of the poet's works; and Sir

Frederick Madden has maintained the same orthography in a letter printed in the "Archæologia." But what gain is there in the change? Every one acquainted, not only with MSS. but with the printed literature of the 16th and 17th centuries, knows how unfixed was the orthography of all proper names.

Turn we, however, to the poet's name as printed during his own life time; and probably under his own supervision, and there we are left in no doubt as to what he and his contemporaries made of it. We have in 1599, "The Passionate Pilgrim, by W. Shakespeare," in 1609, "Shakespeare's Sonnets," and in 1616—the year of his death—"The Rape of Lucrece, by Mr. William Shakespeare." So also his friends and posthumous editors, Heminge and Condell, when aiming, as they say, "without ambition either of self-profit or fame: onely to keepe the memory of so worthy a friend, and fellow alive, as was our Shakespeare." Or, best authority of all, let us turn to Ben Jonson's graphic pun:

> "Look how the father's face
> Lives in his issue: even so, the race
> Of Shakespeare's mind and manners brightly shines
> In his well-turned and true-filed lines:
> In each of which he seems to shake a lance,
> As brandished at the age of ignorance."

But this is a digression. Let us now invite the reader's attention to a few specimens culled from the pages of our Canadian poet, in illustration of his style and mode of treatment of the subjects he has selected for his verse.

In the "Prophecy of Merlin," the piece from which Mr. Reade's volume takes its designation, the familiar poetic artifice is adopted of putting in the mouth of an ancient seer, by supposed anticipation, an account of recent events and present times. Sir Bedivere, sole survivor of the Knights of the Table Round, mourning for the departure of his adored King, is favoured by Merlin with a prophecy of the fortunes that will befall Britain while yet Arthur should be slumbering on unseen in Avalon.

It is necessary first to glance at what Merlin declares in regard to himself. He says—

> "Mine is the blazonry of prophet souls
> Whose lineage finds in God its kingly head.
> To me, what was, and that which is to come,
> Are ever present, and I grow not old
> With time, but have the gift of endless youth."

Out of Britain, after enduring much from the "great white Dragon of the stormy North," the "Tigers of the Sea," and other ravagers,—Merlin foretells that a nation by a happy amalgamation of friend and foe, was destined to arise:—

"Like a strong oak amid the forest trees,
Which, growing slowly, ceases not to grow,
But fastens firmly, as it aims aloft
And spreads its branches far on every side,
A shelter to the stranger of all lands."

In every king that should reign over the people, thus originating from such a complex union, some reflection, as it were, of Arthur would be recognized:—

"And if there be a king of soul impure—
Or if there be a king of hand unjust—
Or if there be a king who weighs himself
Against the nation's weal (such kings there are,
And ever shall be, until Arthur wake),—
It is the *real* king the people serve,
The Blameless Prince that never can do wrong,
And not the false usurper of his name."

In the series of British rulers there were to be queens; and when the third of these had "slept for many years," a fourth was to arise, "heir to the ripe fruit of long centuries." She was to be "fair, good and wise," and to be loved "by all the land of Britain, and by many lands on every sea." In her day the nation was to enter on an era of increased light, and to enjoy the benefit of extraordinary discoveries and inventions.

——"The earth and air
Shall yield strange secrets for the use of men,—
The planets in their courses shall draw near,
And men shall see their marvels, as the flowers
That grace the meads of Summer,—time and space
Shall know new laws, and history shall walk
Abreast with fact o'er all the peopled world:—
For words shall flash like light from shore to shore,
And light itself shall chronicle men's deeds.
Great ships shall plough the ocean without sail,
And steedless chariots shoot with arrowy speed
O'er hill, and dale, and river, and beneath
The solid floor we tread,—the silent rocks
Shall tell the story of an infant world,—

The falling leaf shall shew the cause of things
Sages have sought in vain—and the whole vast
Of sight and sound shall be to man a school
Where they may learn strange lessons; and great truths,
That long have slept in the deep heart of God
Shall waken and come forth and dwell with men,
As in the elder days the tented lord
Of countless herds was taught by angel-guests."

A Prince "of goodly mien and face, from o'er the sea" shall wed this queen, and "loving her, be loved by all the world." Sir Bedivere at once adopts the idea that this is the Blameless Prince himself, returning, according to general expectation, from his long sleep in Avalon, "to crown the glories of the latter world." Merlin admits that, if not Arthur himself, he would be one whose aims in respect to Britain would be like those of the British hero-king. The coming Prince in after time was to take "the purpose" of Arthur—

—"From the dim shrine where it had lain
Scarce touched by dreamy reverence, many an age,
And hold it in the daylight of his life."

What "the purpose" of the ancient King had been is fully told:

—"In deeds of war,—
The rage of battle, and the clangorous charge
Of mailed knights, and flash of hostile swords,
And flying spears, and din of meeting shields,
And all the use of man-ennobling might,
For Christ and for his Cross, to wrest the land
From heathen foes—did Arthur win his fame.
For this, by marvels, was he chosen King;
For this he sent his heralds to all parts
Of the divided realm, to summon forth
All bravest, truest knights of Christendom,
From rude and selfish war to Camelot,
That they might be one heart around himself,
To send new life-blood through the sickly land,
And purge it of the plague of heathenness.
And had not the foul falsehood of his house
Broken athwart the true aim of his life,
And set the Table Round against itself,
Ere now the heathen Dragon had been crushed,
Never again to raise its hideous head
O'er the fair land that Christ's Apostle blessed."

The predestined impersonation of the "Blameless Prince" is not to work alone in the fulfilment of his high aims:

> "She whom his heart had won,
> With loving aid, shall ever at his side
> (Till death them part) sustain him in his thought.
> And these two, nobly mated, each to each
> The sweet and ripe completion, shall be named
> With loyal love and tenderest respect
> By knight and lady, poet, sage and priest,
> In mart and camp, in palace and in cot,
> By babbling grey-beard and by lisping child,
> Wherever British banner is unfurled."

Success is to crown the joint efforts of queen and prince:

> "So shall the land grow strong with bonds of peace,
> Till men believe that wars have ceased to drench
> The earth with bloody rain; and Art shall smile
> On myriad shapes of beauty and of use,
> And Wisdom shall have freer scope, and push
> The boulders of old Folly from her field;
> And men shall walk with larger minds across
> The limits of the superstitious past,
> And cull the gold out of the dross of things,
> Flinging the dross aside; and then shall be
> New hopes of better changes yet to be,
> When harmony shall reign through all the world,
> And interchange of good for common weal
> Be only law."

Our space forbids more specimens of the quality of the "Prophecy of Merlin." It must suffice to say that in the vision of supposed future events, the memorable Exposition of 1852, the wars that speedily followed, and the death that subsequently spread such gloom over the Empire, are all sketched with gracefulness and skill; though the reader can scarcely fail to recall, and perhaps to contrast in dangerous parallel with the latter, the exquisite dedication of "The Idyls" to our widowed Queen:

> "Her, over all whose realms, to their last isle,
> Commingled with the gloom of imminent war,
> The shadow of his loss moved like eclipse,
> Darkening the world."

Our Canadian share in such world-wide sympathies is thus happily introduced, in answer to Sir Bedivere's inquiry:

> "'If, in the far-off after-time, shall come
> A prince who shall be known by Arthur's name,
> And bear it blamelessly as he did his?'
> Then Merlin, with a wise smile on his face,
> Such as a mother wears who gently tries
> To answer the hard question of the child,"

thus predicts the visit to our Western hemisphere of the royal youth who recently won from the Canadian people so many golden opinions. Here are some of the words of the seer on this subject:

> "In a far land, beneath the setting sun,
> Now and long hence undreamed of (save by me,
> Who, in my soul's eye, see the great round world
> Whirled by the lightning touches of the sun
> Through time and space), a land of stately woods,
> Of swift broad rivers, and of ocean lakes,
> The name of Arthur—him that is to be,—
> (Son of the Good Queen and the Blameless Prince)
> Shall shed new glories upon him we loved."

This may possibly seem a little too much in the vein of the old courtly Laureate's expected return for his butt of sack; but though ephemeral in its theme, the subject is pleasantly and gracefully treated.

Some other pieces of a minor character may fitly class with this in their slighter themes and mere momentary interest. We have, for example, little poems, which we may fancy have already figured in the columns of some local magazine or broadsheet, such as the "Departure of the Prince of Wales from Portland in 1860," and the "Marriage of the Prince of Wales in 1863." Pieces of special Canadian interest, all characterised by delicacy of sentiment and poetical feeling, are the following: "The Fenian Raid of 1866;" "Dominion Day, 1867;" "Hastings" (also commemorative of Canadian Confederation); and "In Memoriam"— T. D. McGee. Of a different and higher character are "Balaam," "Rizpah," "Sisera," "Jephthah," "Jubal," "Vashti," and the "Prodigal's Return;" all renderings of Scripture narratives characterised by freshness, naturalness and dignity. The visions of "Balaam" are imagined with especial grandeur: nor can we hesitate to trace some of its beautiful imagery to the writer's familiarity with the splendours of our Canadian auroras:

——"Gazing on the western sky, he saw
A picture, all whose forms were quick with life,
Where all was discord, hurrying to and fro,
As when two armies strive to gain the field;
For, from the outer realms of space there came
Gigantic spearsmen, over whom there waved
Gay, many-colored banners; and these flew
Hither and thither o'er the starry plain,
Pursuing and retreating: others came,
And others, till it seemed all Sabaoth
Had joined in conflict with the wicked one.
And then there was a charge; banners and spears
Faded away, as fades away the reek
Above a hamlet on a frosty morn;
And none can tell when he sees last of it.
And in a little while there grew an arch,
Whose keystone was the zenith of the sky,
Like to a rainbow, joining east and west,
Beautiful, quivering, fearful, ominous,
Drawing the heart of Balaam after it.
And this too vanished, vapor-like, away;
And Balaam, though he wanted its return,
Waited in vain; for warriors and spears,
And banners, and the fiery flash of hosts
Embattled, and the mystic arch, were gone,
And came no more."

"Christus Salvator" is a pleasant Latin acrostic, in short mediæval hymn measure. "Columba Sibylla" embodies in fourteen Latin hexameters an epigrammatic play on the name of Christopher Columbus: like Noah's dove, a happy discoverer of land amid a waste of waters. The fourteen concluding pieces, translated from the Greek, Latin and French, are all acceptable in their well-turned lines, as pleasant evidence of scholarship already taking root in our young country.

The formal restraints of the Sonnet have also been successfully dealt with in "Kings of Men," "Winter Sunshine," "Winter," &c. We select one of these with which to close our illustrations of Mr. Reade's verse. It is, if not in part an unconscious echo, at least suggestive of ideas crystalised into sonnet-form by the master-hand of him who for the first time made this little poem the vehicle of "soul-animating strains;" wherein he asks:

"Doth God exact day-labour, light denied?"

It is pleasant to find lofty sentiments and earnest devoutness claiming to mate together thus in our poet's lines—

"What can I do that others have not done?
What can I think that others have not thought?
What can I teach that others have not taught?
What can I win that others have not won?
What is there left for me beneath the sun?
My labour seems so useless, all I try
I weary of, before 'tis well begun;
I scorn to grovel, and I cannot fly.
Hush! hush! repining heart! there's One whose eye
Esteems each honest thought, and act, and word,
Noble as poet's songs or patriot's sword.
Be true to Him: He will not pass thee by.
He may not ask thee 'mid His stars to shine,
And yet He needeth thee: His work is thine."

E.

CANADIAN INSTITUE.

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From the College.

Annual Calendar McGill College, Montreal, Session 1869-70 1

From University of Christiania, per Smithsonian Institution, Washington.

Sitzungs-Berichte der Naturwissenschaftlichen Gesellschaft isis in Dresden, Jahrgang, 1868, Nr. 4; 6 April, Mai, Juni. 1

From C. Ed. Müller, Bremen, per Smithsonian Institution.

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Proceedings of the Literary and Philosophical Society of Liverpool, 1865-66, No. XX., 1; 1866-67, No. XXI., 1; 1867-68, No. XXII., 1	3

From the Academy, Salem, U. S.

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Transactions of the Nova Scotia Institute of Natural Sciences.....	1

Donations to the Museum.

Collected by Prof. C. F. Hartt, at the "Fern Ledges," near St. John, New Brunswick, and described in the Journal of the Geological Society of London, Vols. XVIII. and XIX.; and in Dawson's Acadian Geology, 2nd edition.

From the Natural History Society of St. John.

1 & 1*a*. Asterophyllites latifolia, Dawson.
2 & 2*a*. Asterophyllites acicularis, "
3. Neuropteris polymorpha, "
4 & 4*a*. Alithopteris discrepans, " (and broad variety)
5. Psilophyton elegans, "
6. Psilophyton glabrum, " (fragment)
7. Sphenopteris Horninghausi, Brougt.
8. Sphenopteris Hitchcockiana, Dawson.
9. Sphenopteris marginata, "
10. Sphenopteris pilosa, "
11. Hymenophyllites subfurcatus, "
12. Cardiocarpum Crampii, Hartt.

13. Cardiocarpum acutum, Dawson.
14. Cardiocarpum cornutum, "
15. Pecopteris serrulata, Hartt.
16. Cylopteris obtusa, Goeppert.
17. Annularia acuminata, Dawson.
18. Pinnularia Dispalans, "
19. Cordaites Robbii, "
20. Neuropteris Dawsoni, Hartt.
21. Calamites transitionis, Goeppert.
22. Calamites cannaeformis, Brougt.
23. Calamites.
24. Slabs, with various species.

From H. R. Fletcher.

1. Gold quartz—Indian Path, Nova Scotia.
2. " Tangier, "
3. " Tangier, "
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*** No. 2 gives from 10 to 12 dwts. No. 3 gives from 1 to 2 oz.

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Transactions of the Nova Scotia Institute Natural Science	1	"
Nature	1	"

CANADIAN LOCAL HISTORY.

TORONTO OF OLD:

A SERIES OF COLLECTIONS AND RECOLLECTIONS.

(Continued from page 438.)

BY THE REV. DR. SCADDING.

XXVII.—QUEEN STREET, FROM THE DON BRIDGE TO PARLIAMENT STREET.

We return once more to the Don bridge; and from that point commence a journey westward along the thoroughfare now known as Queen Street, but which at the period at present occupying our attention, was non-existent. The region through which we at first pass was long known as the Park. It was a portion of Government property not divided into lots and sold until recent times. Originally a great space extending from the first Parliament houses, bounded southward and eastward by the water of the bay and Don, and northward by the Castle Frank lot, was set apart as a "Reserve for Government Buildings," to be, it may be, according to the idea of the day, a small domain of woods and forest in connection with them; or else to be converted in the course of time into a source of ways and means for their erection and maintenance. The latter appears to have been the view taken of this property in 1811. We have seen a plan of that date, signed "T. Ridout, S. G." shewing this reserve divided into a number of moderate sized lots, each marked with "the estimated yearly rent, in dollars, as reported by the Deputy Surveyor [Samuel S. Wilmot]." The survey is therein stated to have been made "by order of His Excellency Francis Gore, Esq., Lieutenant-Governor." The number of the lots is eighty-three. None of them bear a larger figure than twenty dollars. Some of them, consisting of minute bits of marsh, were expected to yield not more than one dollar. The revenue from the whole it realised would have been Eleven hundred and thirty-three dollars. In this plan, what is now Queen Street is duly laid down, in direct continuation of the Kingston Road westward, without regard to the engineering difficulties, presented by ravines; but it is entitled, in large letters, "Dundas Street." On its north side lie forty-six, and on its south, thirty-seven of the small lots into which the whole reserve is divided. The scheme was never carried into effect. The Park, as we remember it, was a tract of land in a state of nature, densely covered, towards the north, with massive pines; and towards the south, with a thick secondary growth of the same forest tree. Through these woods ran a devious and rather obscure track, originating in the bridle-road cut out, before the close of the preceding century, to Castle Frank; one branch led off from it to the Playter-estate, passing down and up two very steep and difficult precipices; and another, trending to the west and north, conducted the wayfarer to a point on Yonge Street about where Yorkville is now to be seen. To the youthful imagination, the Park, thus clothed with veritable forest—

> The nodding horror of whose shady brows
> Awed the forlorn and wandering passenger—

and traversed by irregular, ill-defined and very solitary paths, leading to widely-separated localities, seemed a vast and rather mysterious region, the place that immediately flashed on the mind, whenever in poem or fairy tale, a wild or wold or wilderness was named. As time rolled on, too, it became actually the haunt and hiding place of lawless characters.

After passing, on our left, the burial-plot attached to the first R. C. Church of York, and arriving where Parliament Street, at the present day, intersects, we reached the limit, in that direction, of the "Reserve for Government Buildings." Stretching from the point indicated, there was on the right side of the way, a range of "park lots," extending some two miles to the west, all bounded on the south by what at the present time is Queen Street, but which, from being the great thoroughfare along the front of this very range, was long known as "Lot Street." (In the plan above spoken of, it is marked, as already stated, "Dundas Street," it being a section of the great military way, bearing that name, projected by the first Governor of

Upper Canada to traverse the whole province from west to east, as we shall have occasion hereafter to narrate.)

In the early plan of this part of York, the names of the first locatees of the range of park-lots are given. On the first or easternmost lot we read that of John Small. On the next, that of J. White. In this collocation of names there is something touching, when we recall an event in which the first owners of these two contiguous lots were tragically concerned. Friends, and associates in the Public Service, the one as Clerk of the Crown, the other as Attorney General for Upper Canada, from 1792—1800, their dream doubtless was to pass the evening of their days in pleasant suburban villas placed here side by side in the outskirts of the young capital. But there arose between them a difficulty, trivial enough probably at the beginning, but which, according to the barbaric conventionality of the hour, could only be finally settled by a "meeting," as the phrase was, in the field, where chance was to decide between them, for life or death, as between two armies—only now two armies reduced to the absurdity of each consisting of only one man. The encounter took place in a pleasant grove at the back of the Parliament Building, immediately to the east of it, between what is now King Street and the water's edge. Mr. White was mortally wounded and soon expired. By his own direction his remains were deposited in his garden on the park-lot, beneath a bower to which he had been accustomed to retire for purposes of study.

The *Oracle* of Saturday, Jan. 4, 1800, records the duel in the following words: "Yesterday morning a duel was fought back of the Government Buildings by John White, Esq., his Majesty's Attorney General, and John Small, Esq, Clerk of the Executive Council, wherein the former received a wound above the right hip, which it is feared will prove mortal." In the issue of the following Saturday, Jan. 11th, the announcement appears: "It is with much regret that we express to the public, the death of John White, Esq." It is added: "His remains were on Tuesday evening interred in a small octagon building, erected on the rear of his Park lot." "The procession," the *Oracle* observes, "was solemn and pensive; and shewed that though death, 'all eloquent,' had seized upon him as his victim, yet it could not take from the public mind the lively sense of his virtues. *Vivit post funera virtus.*"

The *Constellation* at Niagara, of the date January 11th, 1800, also records the event, and enjoying a greater liberty of expression than the Government organ at York, indulges in some just and sensible remarks on the irrational practice of duelling in general, and on the sadness of the special case that had just occurred. We give the *Constellation* article:

"Died at York, on the 3rd instant, John White, Esq., Attorney General of this Province. His death was occasioned by a wound he received in a duel fought the day before with John Small, Esq., Clerk of the Executive Council, by whom he was challenged. We have not been able to obtain the particulars of the cause of the dispute; but be the origin what it may, we have to lament the toleration and prevalency of a custom falsely deemed honorable, or the criterion of true courage, innocency or guilt, a custom to gratify the passion of revenge in a single person, to the privation of the country and a family, of an ornament of society, and support: an outrage on humanity that is too often procured by the meanly malicious, who have preferment in office or friendship in view, without merit to gain it, and stupidly lacquey from family to family, or from person to person, some wonderful suspicion, the suggestions of a soft head and evil heart; and it is truly unfortunate for Society that the evil they bring on others should pass by their heads to light on those the world could illy spare. We are unwilling to attribute to either the Attorney General or Mr. Small any improprieties of their own or to say on whom the blame lies; but of this we feel assured, that an explanation might easily have been brought about by persons near to them, and a valuable life preserved to us. The loss is great; as a professional gentleman, the Attorney General was eminent, as a friend, sincere; and in whatever relation he stood was highly esteemed; an honest and upright man, a friend to the poor; and dies universally lamented; and we here cannot refuse to mention, at the particular request of some who have experienced his goodness, that he has refused taking fees, and discharged suits at law, by recommending to the parties, and assisting them with friendly advice, to an amicable adjustment of their differences; and this is the man whom we have lost!"

For his share in the duel Mr. Small was, on the 20th January, 1800, indicted and tried before Judge Alcock and a jury, of which Mr. Wm. Jarvis was the foreman. The verdict rendered was

"Not Guilty." The seconds were—Mr. Sheriff McDonell for Mr. Small, and the Baron DeHayne for Mr. White.

Mr. White's park-lot became afterwards the property of Mr. Samuel Ridout, sometime Sheriff of the County, of whom we have had occasion to speak, several times, already. Mr. Small's lot was occupied and built on by Mr. Edward McMahon, an Irish gentleman, long well-known and greatly respected as Chief Clerk in the Attorney General's office. His name is preserved in that of the street which now runs north and south through the property that had been Mr. Small's.

XXVIII.—QUEEN STREET, FROM PARLIAMENT TO GEORGE STREET.

Sherburn Street which at present divides the White park-lot from Moss Park commemorates happily the name of the old Dorsetshire home of the main stem of the Canadian Ridouts. The original stock of this family still flourishes in the very ancient and most interesting town of Sherburn, famous as having been in the Saxon days the see of a bishop; and possessing still a spacious and beautiful minster, familiarly known to architects as a fine study. Like some other English names, transplanted to the American continent, that of this Dorsetshire family has assumed here a pronunciation slightly different from that given to it by its ancient owners. What in Canada is Ri-dout, at Sherburn and its neighbourhood, is Rid-out.

On the park-lot that constituted the Moss-Park Estate, the name of D. W. Smith appears in the original plan. Mr. D. W. Smith was acting Surveyor General in 1794. He was the author of "A Short Topographical Description of His Majesty's Province of Upper Canada in North America, to which is annexed a Provincial Gazetteer:"—a work of considerable antiquarian interest now, preserving as it does, the early names, native, French and English, of many places now known by different appellations. A second edition was published in London in 1813, and was designed to accompany the new map published in that year by W. Faden. Geographer to the King and Prince Regent. The original work was compiled at the desire of Governor Simcoe, to illustrate an earlier map of Upper Canada.

We have spoken already in our progress through Front Street of the subsequent possessor of Mr. Smith's lot, Col. Allan. The residence at Moss Park was put up by him in comparatively recent times. The homestead previously had been, as we have already seen, at the foot of Frederic Street, on the south-east corner. To the articles of capitulation on the 27th April, 1813, surrendering the town of York to Dearborn and Chauncy, the commanders of the United States force, the name of Col. Allan, at the time Major Allan, is appended, following that of Lieut. Col. Chewett.

Besides the many capacities in which Col. Allan did good service to the community, as detailed during our survey of Front Street, he was also we find in 1801, Returning Officer on the occasion of a public election. In the *Oracle* of the 20th of June, 1801, we have an advertisement signed by him as Returning Officer for the "County of Durham, the East Riding of the County of York, and the County of Simcoe"—which territories are to conjointly elect one member. Mr. Allan announces that he will be in attendance "on Thursday the 2nd day of July next at 10 o'clock in the forenoon, at the Hustings under the Colonnade of the Government Buildings in the town of York—and proceed to the election of one Knight to represent the said county, riding and county in the House of Assembly, whereof all freeholders of the said county, riding and county are to take notice and attend accordingly." The writ, issuing from "His Excellency, Peter Hunter, Esq.," directs the returning officer "to cause one Knight, girt with a sword, the most fit and discreet, to be freely and indifferently chosen to represent the aforesaid county, riding and county, in Assembly, by those who shall be present on the day of election."

Two candidates presented themselves, Mr. A. Macdonell and Mr. J. Small. Mr. Macdonell was duly elected, "there appearing for him," we are briefly informed in a subsequent number of the *Oracle*, "112 unquestionable votes; and for J. Small, Esq., 32: majority, 80."

In 1804 there was another election, when the candidates were Mr. A. Macdonell again, Mr. D. W. Smith, of whom we spoke above, and Mr. Weekes. The address of the last-named gentleman is in the *Oracle* of May 24th. It is addressed to the Free and Independent Electors of the East Riding of York. He says: "I stand unconnected with any party, unsupported by

any influence, and unambitious of any patronage, other than the suffrages of those who consider the impartial enjoyment of their rights, and the free exercise of their privileges as objects not only worthy of the vigilance of the legislator, but also essential to their political security and to their local prosperity. The opportunity of addressing myself to men who may be inclined to think with freedom, and to act with independency, is to me truly desirable; and the receiving of the countenance and support of those characters, must ever bear in my mind impressions more than gratifying. It will not accord with my sentiments, "the address proceeds to say, "to express myself in the usual terms of zeal and fidelity of an election candidate; inasmuch as that the principle of previous assurances has frequently, in the exercise of the functions of a representative, been either forgotten, or occasionally abandoned; but I hope it will not be considered vaunting in me to assert that that zeal and the fidelity which have manifested themselves in the discharge of my duty to my clients, will not be abated in supporting a more important trust—the cause of the public!"

In the *Oracle* of April 7th is an address put forth by friends on the part of Mr. D. W. Smith, who is at the moment absent. It is "to the free and independent electors of the County of Durham, the East Riding of the County of York, and the County of Simcoe." It runs as follows: "The friends of the Hon. D. W. Smith beg leave to offer that gentleman to represent you in the ensuing Parliament. His honor, integrity and ability, and the essential services which, in different capacities, he hath rendered to the Province, are so well known and felt that his friends consider the mentioning of his name only to be the most powerful solicitation which they can use on the present occasion, to obtain for him your favour and suffrage." To this address the following paragraph is added on May the 5th: "The friends of Mr. Smith consider it as their duty further to intimate, that from late accounts received from him in England, it was his determination to set out from that country so as to arrive here early in the summer of this present year."

On the 2nd of May Mr. Macdonnell's address came out. He speaks like a practical orator, accustomed to the outside as well as the interior of the House. He delivers himself in the following vigorous style:—

"To the Worthy Inhabitants of the East Riding of the County of York, and Counties of Durham and Simcoe: Friends and Fellow Subjects. In addressing you by appellations unusual, I believe, on similar occasions, no affectation of singularity has dictated the innovation: my terms flow from a more dignified principle, a purer source of ideas, from a sentiment of liberal and extensive affection, which embraces and contemplates not only such of you as by law are qualified to vote, but also such as a contracted and short-sighted policy has restrained from the immediate enjoyment of that privilege. Your interests inseparably the same, and alike dear and interesting to me, have always been equally my care; and your good will shall indiscriminately be gratifying, whether accompanied with the ability of advancing my present pursuit, or confined to the wishes of my succeeding in it. The anxious anticipation of events, which has engaged so many persons unto such early struggles to supplant me, forces me also to anticipate the dissolution of parliament, in declaring my disposition to continue (if supported by my friends at the next general election) in that situation which I have now the honour of filling in parliament; a situation, which the majority of suffrages which placed me in it, justifies the honest pride of supposing, was not obtained without merit, and inspires the natural confidence of presuming, will not be lost without a fault. I stoop with reluctance, gentlemen, to animadvert upon some puny fabrications circulated to mislead your judgment, and alienate your favor. It has been said that I am canvassing for a seat elsewhere. No! gentlemen: the satisfaction, the pride, of representing that division of this province, which, comprehending the capital, is consequently the political head, is to me, too captivating an object of political ambition to suffer the view of it to be intercepted in my imagination for a moment, by the prospect of any inferior representation. Be assured therefore, gentlemen, that I shall not forsake my present post, until you or life shall have forsaken me. Another calumny of a darker hue has been fabricated. I have been represented as inimical to the provincial statute which restrains many worthy persons migrating into this province from voting at elections, under a residence of seven years. A more insidious, a more barefaced falsehood, never issued from the lips of malice; for during every session of my sitting in parliament, I have been the warmest, and loudest advocate for repealing that statute and for rendering taxation and representation

reciprocal. I shall notice a third expedient, in attempting which, detraction (by resorting to an imposture so gross as to carry its own refutation upon the very face of it) has effectually avowed its own impotency :—It has been whispered that I have endeavoured to increase the general rate of assessments within the Home District. Wretched misrepresentation ! I should have been my own enemy indeed, if I had lent myself to such a measure. On the contrary ; my maxim has been, and shall ever continue to be, that so much of the public burden as possible should be shifted from the shoulders of the industrious farmers and mechanics, upon those of the more opulent classes of the community ; persons with large salaries and lucrative employments : the shallow artifice of these exploded fibs suggests this natural reflection, that slander could find no real foundation to build upon, when reduced to the necessity of rearing its fabrics upon visions. To conclude, gentlemen, I have no interests separate from yours, no country but that which we inhabit in common. In all situations, under all circumstances, I have been the friend of the people and the votary of their rights. I have never changed with the times, nor shifted sides with the occasion ; and you may therefore reasonably confide that I shall always be, gentlemen, your most devoted and most attached servant

" York, 2nd May, 1804. A. MACDONELL.

An attempt had also been made to induce Mr. R. Henderson to become a candidate at this election. He explained the reason why he declined to come forward in the following card :—" The subscriber thinks it a duty incumbent on him thus publicly to notify his friends who wished him to stand as a candidate at the ensuing election for York and its adjacent counties ; that he declines standing, having special business that causes his absence at the time of the election. He hopes that his friends will be pleased to accept of his grateful acknowledgments for the honour they wished to confer on him. But as there are several candidates who solicit the suffrages of the Public, they cannot be at a loss. He leaves you, gentlemen, to the freedom of your own will. He has only to observe that were he present on the day of election, he would give his vote to the Honorable David William Smith. I am, Gentlemen, your obedient and obliged servant, R. HENDERSON, York, 26th May, 1804."

Mr. Henderson's occupation was afterwards that of a local army contractor, &c., as may be gathered from an advertisement which is to be observed in the *Oracle* of September 6, 1806 :—" Notice. The subscriber having got the contract for supplying His Majesty's troops at the garrison with fresh beef, takes the liberty of informing the public that he has engaged a person to superintend the butchering business, and that good fresh beef may be had three times a week. Fresh pork and mutton will be always ready on a day's notice ; poultry, &c. Those gentlemen who may be pleased to become customers, may rely on being well served, and regularly supplied. If constant customers, &c., a note of the weight will be sent along with the article. Families becoming constant customers, will please to send a book by their servant, to have it entered, to prevent any mistakes. The business will commence on Monday, the 1st of September next. R. Henderson. York, Aug. 28, 1806."—The grazing ground of Mr Henderson's fat cattle was extensive. In the same paper we have a notice bearing his signature, announcing that "the subscriber has a considerable number of fat cattle running at large between the town and the Humber. They are all branded on the horns with R. H." The notice continues : "If any of said cattle should be offered for sale to butchers or others, it is hoped no one will purchase them, as they may suppose them to be stolen. A number of fat cattle is still wanted, for which cash will be paid."

The result of the election at York in 1804 is announced in the *Oracle* of June 16. As was probably to be expected, Mr. Macdonell was the man returned. Thus runs the paragraph : "On Monday last the 11th instant, the election of a Knight to represent the counties of Durham and Simcoe and the East Riding of the County of York, took place at the Government Buildings in this town. At the close of the poll, Angus Macdonell was declared to be duly elected to represent the said counties and riding. We have not yet been able to collect any further returns," the Editor adds, "but as soon as practicable they will be laid before the public." On the 4th of the following August, accordingly the following complete list was given of members returned at the election of 1804. Alexander Macdonell and W. B. Wilkinson, Esqrs., Glengarry and Prescott. Robert Isaac DeGrey, Esq., Stormont and Russell. John Chrysler, Dundas. Samuel Sherwood, Esq., Grenville. Peter Howard, Esq., Leeds. Allan McLean, Esq., Frontenac. Thomas Dorland, Esq., Lennox and Addington. Ebenezer Washburn, Esq., Prince Edward. David

McGregor Rogers, Esq., Hastings and Northumberland. Angus Macdonell, Esq., Durham, Simcoe and East Riding of York. Solomon Hill and Robert Nelles, Esqrs., West Riding of York, First Lincoln, and Haldimand. Isaac Swayzey and Ralph Clench, Esqrs., 2nd, 3rd and 4th Ridings of Lincoln. Benaiah Mallory, Esq. Norfold, Oxford and Middlesex. John McGregor, Esq., Kent. Matthew Elliott and David Cowan, Esqrs., Essex.

The Mr. Weekes who, as we have seen, was an unsuccessful candidate for a seat in parliament in 1804 was nevertheless a member of the House in 1806, representing the constituencies to which he had previously offered himself. In 1806 he was killed in a duel with Mr. Dixon at Niagara, another victim to the barbarian social code of the day, which obliged gentlemen on certain occasions of difference to fire pistols at each other. In the *Oracle* of the 11th of October, 1806, we read the announcement: "Died on Friday the 10th instant at night, in consequence of a wound received that morning in a duel, William Weekes, Esq., Barrister-at-law, and a Member of the House of Assembly for the counties of York, Durham and Simcoe." In the next issue of the paper, dated October 25, 1806, we have a second record of the event in the following terms, with a eulogy on Mr. Weekes' character: "It is with sentiments of the deepest regret that we announce to the public the death of William Weekes, Esq., Barrister-at-law in this Province; not only from the melancholy circumstances attendant on his untimely death, but also from a view of the many virtues this Province is deprived of by that death. In him the orphan has lost a father, the widow a friend, the injured a protector, society a pleasing and safe companion, and the Bar one of its ablest advocates. Mr. Weekes was honest without the show of ostentation. Wealth and splendor held no lure for him; nor could any pecuniary motives induce him to swerve in the smallest degree from that which he conceived to be strictly honorable. His last moments were marked with that fortitude which was the characteristic of his life, convinced of the purity of which, he met death with pleasure."

"His funeral was delayed longer than could have been wished, a form of law being necessary previous to that ceremony. He was interred on Tuesday, the fourteenth. His funeral," it is added, "was attended by a respectable assemblage of people, from the house of John MacKay, Esq., in the following order: mourners, John MacKay, Esq.; Three Members of the House of Assembly, of which he was a member; viz., Ralph Clench, J. Swayzey, Robert Nelles: Dr. West, Surgeon of the American Garrison, Dr. Thomas, 41st Regt., Dr. Muirhead, Niagara; the Gentlemen of the Bar; the Magistrates of the place; and a numerous concourse of people from Town and Country."

This duel, as we have been informed, was fought on the United States side of the river, near the French Fort.

Mr. Weekes, we believe, was an unmarried man. He was fond of solitary rambles in the woods in search of game. Once he was so long missing that foul play was suspected; and some human remains having been found under a heap of logs on the property of Peter Ernest, Peter Ernest was arrested; and just as the evidence was all going strongly against him, Mr. Weekes appeared on the scene alive and well.

One more of these inhuman and unchristian encounters, with fatal result, memorable in the early annals of York, we shall have occasion to speak of hereafter when, in our intended progress up Yonge Street, we pass the spot where the tragedy was enacted.

Mr. Weekes was greatly regretted by his constituents. "Overwhelmed with grief," they say in their address dated the 20th September, 1806, to the gentleman whom they desire to succed him "at the unexpected death of our late able and upright Representative; we, freeholders of these Counties of York, Durham and Simcoe, feel that we have neglected our interests in the season of sorrow. Now awake, it is to you we turn; notwithstanding the great portion of consolation which we draw from the dawning of our impartial and energetic administration (The allusion is to Gov. Gore). Fully persuaded that the great object of your heart is the advancement of public prosperity, the observance of the laws, and the practice of religion and morality, we hasten with assurances of our warmest support, to invite you from your retreat to represent us in Parliament. Permit us, however, to impress upon you, that as subjects of a generous and beloved King; as a part of that great nation which has for so long a time stood the bulwark of Europe, and is now the solitary and inaccessible asylum of liberty; as the children of Englishmen, guarded, protected and restrained by English laws; in fine, as members of their community, as fathers and sons we are induced to place this confidence in your virtue,

from the firm hope that, equally insensible to the impulse of popular feeling and the impulse of power, you will pursue what is right. This has been the body of your decisions: may it be the spirit of your counsels! (Signed by fifty-two persons, residing in the Town and Township of York.) The names not given. These words were addressed to Mr. Justice Thorpe. His reply was couched in the following terms: "Gentlemen, with pleasure I accede to your desire. If you make me your representative I will faithfully discharge my duty. Your confidence is not misplaced. May the first moment of dereliction be the last of my existence. Your late worthy representative I lament from my heart. In private he was a warm friend; at the Bar an able advocate, and in Parliament a firm patriot. It is but just to draw consolation from our Governor, when the first act of his administration granted to those in the U. E. list and their children, what your late most valuable member so strenously laboured to obtain. Surely from this we have every reason to expect that the liberal interests of our beloved sovereign, whose chief glory is to reign triumphantly enthroned on the hearts of a free people, will be fulfilled, honoring those who give and those who receive, enriching the Province and strengthening the Empire. Let us cherish this hope in the blossom: may it not be blasted in the ripening." A postscript is subjoined: "P.S. If influence, threat, coercion or oppression should be attempted to be exercised over any individual, for the purpose of controlling the freedom of election, let me be informed.—R. T."

We now proceed on our prescribed course. So late as 1833 Walton in his "York Commercial Directory, Street Guide, and Register," when naming the residents on Lot Street, as he still designates Queen Street, makes a note on arriving two park lots to the westward of the spot where we have been pausing, to the effect, that "here this street is intercepted by the grounds of Capt. McGill, S. P. Jarvis, Esq., and Hon. W. Allan: past here it is open to the Roman Catholic Church, and intended to be carried through to the Don Bridge."

The process of levelling up, now become so common in Toronto, has effectually disposed of the difficulty temporarily presented by the ravine or ancient water-course, yet partially to be seen either in front of or upon the park lots occupied by the old inhabitants just named; and Queen Street, at the present hour, is an uninterrupted thoroughfare in a right line, and almost on a level the whole way, from the Don in the east to the Lunatic Asylum in the west, and beyond on to the gracefully curving margin of Humber Bay. The unfrequented and rather tortuous Britain Street is a relic of the deviation occasioned by the ravine, although the actual route followed in making the detour of old was Duchess Street.

XXVIII.—QUEEN STREET—DIGRESSION AT CAROLINE STREET—HISTORY OF THE EARLY PRESS.

A little to the south of Britain Street, between it and Duchess Street, near the spot where Caroline Street, slightly diverging from the right line, passes northward to Queen Street, there stood in the early day a long, low wooden structure, memorable to ourselves, as being, in our school-boy days, the Government Printing Office. Here the *Upper Canada Gazette* was issued, by "R. C. Horne, Printer to the King's Most Excellent Majesty." We shall have occasion hereafter to notice among our early inhabitants some curious instances of change of profession. In the present case, His Majesty's Printer, was in reality an Army Surgeon, once attached to the Glengarry Light Infantry. And again, afterwards, the same gentleman was for many years the Chief Teller in the Bank of Upper Canada. An incident in the troubles of 1837 was "the burning of Dr. Horne's house," by a party of the malcontents who were making a shew of assault upon the town. The site of this building, a conspicuous square two-story frame family residence, was close to the toll-bar on Yonge Street, in what is now Yorkville. On that occasion, we are informed, Dr. Horne "berated the Lieutenant Governor for treating with avowed rebels, and insisted that they were not in sufficient force to give any ground of alarm."

The *Upper Canada Gazette* was the first newspaper published in Upper Canada. Its first number appeared at Newark or Niagara on Thursday, the 18th of April, 1793. As it was apparently expected to combine with a record of the acts of the new government some account

happening on the continent at large, it was made to bear the double title of *Upper Gazette, or American Oracle.* Louis Roy was its first printer, a skilled artizan engaged ably from Lower Canada, where printing had been introduced about thirty years previously, n after the English occupation of the country.

Louis Roy's name appears on the face of No. 1, Vol. I. The type is of the shape used in contemporaneous printing, and the execution is very good. The size of the sheet which ratained the folio form, was 15 × 9½ inches. The quality of the paper was rather coarse, but stout and durable.

The address to the public in the first number is as follows: "The Editor of this paper respectfully informs the public that the flattering prospect which he has of an extensive sale for his new undertaking has enabled him to augment the size originally proposed from a Demy Quarto to a Folio.

"The encouragement he has met will call forth every exertion he is master of, so as to render the paper useful, entertaining and instructive. He will be very happy in being favored with such communications as may contribute to the information of the public, from those who shall be disposed to assist him, and in particular shall be highly flattered in becoming the vehicle of intelligence in this growing Province of whatever may tend to its internal benefit and common advantage. In order to preserve the veracity of his paper, which will be the first object of his attention, it will be requisite that all transactions of a domestic nature, such as deaths, marriages, &c., be communicated under real signatures.

"The price of this *Gazette* will be three dollars per annum. All advertisements inserted in it and not exceeding twelve lines will pay 4s. Quebec currency; and for every additional length a proportionable price. Orders for letter-press printing will be executed with neatness, dispatch and attention, and on the most reasonable terms."

An advertisement in the first number informs the public that a brewery is about to be established under the sanction of the Lieutenant Governor. "Notice is hereby given, that there will be a brewery erected here this summer under the sanction of his Excellency the Lieutenant Governor, and encouraged by some of the principal gentlemen of this place; and whosoever will sow barley and cultivate their land so that it will produce grain of a good quality, they may be certain of a market in the fall at one dollar a bushel on delivery. "W. HUNT.

"Niagara, 18th April, 1793."

The No. dated Niagara, May 2, 1793, "hath" the following advertisement:

"Sampson Jutes begs leave to inform all persons who propose to build houses, &c., in the course of this summer, that he hath laths, planks and scantlings of all kinds to sell on reasonable terms. Any person may be supplied with any of the above articles on the shortest notice. Applications to be made to him at his Mill near Mr. Peter Secord's."

In the No. for May 30, 1793, we have ten guineas reward offered for the recovery of a Government grindstone:

"Ten Guineas Reward is offered to any person that will make discovery and prosecute to conviction, the Thief or Thieves that have stolen a Grindstone from the King's Wharf at Navy Hall, between the 30th of April and the 6th instant. "JOHN MCGILL,

"Com. of Stores, &c. &c., for the Province of Upper Canada.

"Queenstown, 16th May, 1793."

The Anniversary of the King's Birth-day was celebrated at Niagara in 1793 in the following manner:

"Niagara, June 6. On Tuesday last, being the Anniversary of His Majesty's birthday, His Excellency the Lieutenant Governor had a Levee at Navy Hall. At one o'clock the troops in garrison and at Queenston fired three vollies; the field-pieces above Navy Hall, under the direction of the Royal Artillery, and the guns of the Garrison, fired a Royal Salute. His Majesty's schooner, the *Onondago*, at anchor in the river, likewise fired a Royal Salute. In the evening his Excellency gave a Ball and elegant Supper at the Council Chamber, which was most numerously attended."

In the second volume (1794) of the *Gazette and Oracle* Louis Roy's name disappears. G. Tiffany becomes the printer. In 1796 it has assumed the Quarto form, and is dated "West Niagara," a name that Newark was beginning to acquire.

In 1799, the *Gazette* being about to be removed across permanently to York, the new capital, whither also all the government offices were departing, Messrs. S. and G. Tiffany decide on starting a newspaper on their own account for Niagara. It is called "the *Canada Constellation*," and its terms are four dollars per annum. It is announced to appear weekly "opposite the Lion tavern." The date of the first number is July 20. In the introductory address to the public the Messrs. Tiffany make use of the following rather involved language: "It is a truth long acknowledged that no men hold situations more influential of the minds and conduct of men than do printers; political printers are sucked from, nursed and directed by the press; and when they are just, the community is in unity and prosperity; but when vicious, every evil ensues; and it is lamentable that many printers, either vile, remiss in, or ignorant of, their duty, produce the latter or no effect; and to which of these classes we belong, time will unfold."

The public means of maintaining a regular correspondence with the outer world being insufficient the enterprising spirit of the Messrs. Tiffany led them to think of establishing a postal system of their own. In the *Constellation* for August 23 we have the announcement: "The printers of the *Constellation* are desirous of establishing a post on the road from their office to Ancaster and the Grand River, as well as another to Fort Erie; and for this purpose they propose to hire men to perform the routes as soon as the subscriptions will allow of the expense. In order to establish the business, the printers on their part will subscribe generously, and to put the design into execution, but little remains for the people to do." We can detect in the *Constellation* a natural local feeling against the upstart town of York which had now drawn away almost every thing from the old Newark. Thus in the number for November the 14th, 1799, a communication from York, signed *Amicus*, is admitted, written plainly by one who was no great lover of the place. It affords a glimpse of the state of its thoroughfares, and of the habits of some of its inhabitants. *Amicus* proposes a "*Stump Act*" for York; *i. e.*, a compulsory eradication of the stumps in the streets: so that "the people of York in the space of a few months may" as he speaks "relapse into intoxication with impunity; and stagger home at any hour of the night without encountering the dreadful apprehension of broken necks." The same animus gives colour to remarks on some legal verbiage recently employed at York. Under the heading "Interesting Discovery" we read: "It has been lately found at York that in England laws are made; and that a law made in England is the law of England, and is enforced by another law: that many laws are made in Lower Canada and follow up, that is, follow after, or in other words are made since, other laws; and that these laws may be repealed. It is seldom," continues the writer in the *Constellation* "that so few as one discovery slips into existence at one birth. Genius is sterile, and justly said to be like a breeding cat, as is verified in York, where by some unaccountable fortuity of events all genius centers; at the same time with the above, its twin kitten came forth, that an atheist does not believe as a Christian." In another number we have some chaffing about the use of the word *capital*. In an address on the arrival of Governor Hunter, the expression, "We, the inhabitants of the Capital" had occurred. "This fretted my pate," the critic pretends to complain. "What can this be? Surely it is some great place in a great country was my conclusion; but where the Capital is, was a little beyond my geographical acquaintance. I had recourse to the books," he continues: "all the gazettes and magazines from the year One I carefully turned over, and not one case among all the addresses they contained afforded me any instruction: 'We, the inhabitants of the cities of London and Westminster, of Edinburgh, Dublin, Paris, &c.,' only proved to me that neither of these is the Capital. But as these are only *little* towns in young countries, and cannot be so forward as to take upon themselves the pompous title of *capital*, it must be in America." He then professes to have consulted the *Encyclopædia Eboretica*, or "A Vindication in support of the great Utility of New Words," lately printed in Upper Canada, and to have discovered therein that the Capital in question "was, in plain English, York." He concludes therefore that whenever in future the expression "We, the inhabitants of the Capital" is met with, it is to be translated into the vernacular tongue, "We, the inhabitants of York, assembled at McDougal's, &c." The *Constellation* does not appear to have succeeded. Early in 1801 a new paper comes out, entitled the *Niagara Herald*. In it, it is announced that the *Constellation* "after existing one year, expired some months since of starvation, its publishers departing too much from its constitution (advance pay)." The printer is now Silvester Tiffany, the senior proprietor of the *Constellation*. It is very well printed with good type; but on blue wrapping

paper. In little more than two years, viz., on the 4th June, 1802, it is announced that the publication of the *Herald* is suspended; that it will appear only "on particular occasions;" but Mr. Tiffany hopes it "will by and by receive a revival." Other early papers published at the town of Niagara were the *Gleaner*, by Mr. Heron; the *Spectator*; and the *Mail*. The last named still exists.

In 1800, the *Upper Canada Gazette or American Oracle* is issued at York, weekly, from the office of Willam Waters and T. G. Simons. In the number for Saturday May the 17th in that year, we read that on the Thursday evening previous, "His Excellency Peter Hunter, Esq., Lieutenant Governor and Commander-in-Chief of the Province arrived in our harbour on board the *Toronto*; and on Friday morning about nine o'clock landed at the Garrison where he is at present to reside."

We are thus enabled to add two items to the table of dates usually given, shewing the introduction of Printing at different points on this Continent: viz., the dates 1793 and 1800 for Niagara and York respectively. The table will now stand as follows:

1639. Cambridge, Massachusetts, Stephen Day and Samuel Green.
1674. Boston, John Foster.
1684. Philadelphia, Wm. Bradford.
1693. New York, Wm. Bradford, (removed from Philadelphia).
1730. Charleston, Eleazer Phillips.
1730. Bridgetown, Barbadoes, David Harry and Samuel Keimer.
1751. Halifax, Nova Scotia, Bartholomew Green jun. and John Bushell.
1764. Quebec, Wm. Brown and Thos. H. Gilmore.
1771. Albany, Alex. and Jas. Robertson.
1775. Montreal, Chas. Berger and Fleury Mesplet.
1784. St. Georges, Bermuda, J. Stockdale.
1793. Newark (Niagara), Louis Roy.
1795. Cincinnati, S. Freeman.
1800. York (Toronto), Wm. Waters and T. G. Simons.

As at York and Niagara, the first printers in most of the places named were publishers of newspapers.

It may be added that a press was in operation in the City of Mexico in 1569; and in the City of Lima in 1621. The original of all the many colonial government *Gazettes* was the famous royal or exclusively court news-sheet published first at Oxford in November, 1665, entitled the *Oxford Gazette*, and in the following year, at London, and entitled then and ever afterwards to this day, the *London Gazette*.

In 1801 J. Bennett succeeds Messrs. Waters and Simons, and becomes the printer and publisher of the *Gazette or Oracle*. In that year the printing-office is removed to "the house of Mr. A. Cameron, King Street," and it is added "subscriptions will be received there and at the Toronto Coffee House, York." From March 21st in this year and onward for six weeks, the paper appears printed on blue sheets of the kind of material that used formerly to be seen on the outsides of pamphlets and magazines and Government "Blue-books." Messrs. Printers make no allusion to the circumstance which, as we suppose, was occasioned by the non-arrival of the spring supplies of stationery. The *Herald*, at Niagara, of the same period, appeared, as we have already noticed, in the like guise.

On Saturday, December 26th, 1801, is this statement, the whole of the editorial matter: "It is much to be lamented that communication between Niagara and this town is so irregular and unfrequent, opportunities now do not often occur of receiving the American papers from our correspondents; and thereby prevents us for the present from laying before our readers the state of politics in Europe." In the number for June 13th, the editorial "leader" reads as follows: "The *Oracle*, York, Saturday, June 13th. Last Monday was a day of universal rejoicing in this town, occasioned by the arrival of the news of the splendid victory gained by Lord Nelson over the Danes in Copenhagen roads on the 2nd of April last: in the morning the great guns at the Garrison were fired: at night there was a general illumination, and bonfires blazed in almost every direction." The writer ventures on no further comments.

It would have been gratifying to posterity had the printers of the *Gazette and Oracle* endeavored to furnish a connected record of "the short and simple annals" of their own immediate neighborhood. But these unfortunately were deemed undeserving of much notice. We have announcements of meetings, and projects, and subscriptions for particular purposes, unfollowed up by an account of what was subsequently said, done and effected; and when a local incident is mentioned, the detail is generally very meagre. An advertisement in the number for the 27th August, 1801, reminds us that in the early history of Canada it was imagined that a great source of wealth to the inhabitants of the country in all future time would be the ginseng that was found growing naturally in the swamps. The market for ginseng was principally China, where it was worth its weight in silver. The word is said to be Chinese for "all-heal." In 1801 we find that Mr. Jacob Herchmer, of York, was speculating in ginseng. In his advertisement in the *Gazette and Oracle* he "begs leave to inform the inhabitants of York and its vicinity that he will purchase any quantity of ginseng between this and the first of November next, and that he will give two shillings, New York currency, per pound well dried, and one shilling for green." At a later period, it will be remembered, the cultivation of hemp was expected to be the mainstay of the country's prosperity. The whole of the editorial matter of the *Gazette and Oracle* on the 2nd of January, 1802, is the following: "The *Oracle*, York, Saturday, January 2, 1802. The Printer presents his congratulary compliments to his customers on the New Year." The dignified title of Editor was yet but sparingly assumed. That term is used once by Tiffany at Newark, in the second volume. After the death of Governer Hunter in September 1805, J. Bennett writes himself down "Printer to the King's Most Excellent Majesty." Previously the colophon of the publication had been: "York, printed by John Bennett, by the authority of His Excellency Peter Hunter, Esq., Lieut.-Governor."

Happening to have at hand a bill of Bennett's against the Government we give it here. The modern reader will be able to form from this specimen an idea of the extent of the government requirements in 1805 in regard to printing and the cost thereof. We give also the various attestations appended to the account:

York, Upper Canada, 24th June, 1805.

The Government of Upper Canada,

To JOHN BENNETT, Government Printer.

Jan.	11.	300 copies Still Licenses, ½ sheet foolscap, pica type	0	16 6
March	30.	Printing 20 copies of an Act for altering the time of issuing Licenses for keeping of a House of Public Entertainment, ½ sheet demy, pica type,	0	3 4
April	5.	Inserting a Notice to persons taking out Shop, Still or Tavern Licenses, 6 weeks in the *Gazette*, equal to 4½ advertisements	1	16 0
April	16.	1,000 copies of Proclamation, warning persons that possess and occupy Lands in this Province, without due titles having been obtained for such Lands, forthwith to quit and remove from the same, ½ sheet demy, double pica type	4	18 4
April	22.	100 copies of an Act to afford relief to persons entitled to claim Land in this Province as heirs or devisees of the nominees of the Crown, one sheet demy, pica type	3	6 3
		Printing Marginal Notes to do.	0	5 0
May	14.	Printing 1,500 copies of the Acts of the First Session of the Fourth Parliament, 3 sheets demy, pica type	45	0 0
		Marginal Notes to do. at 5*s.* per sheet	9	15 0
		Folding, Stitching and Covering in Blue Paper, at 1d.	6	5 0
		Halifax Currency	£63	5 9

Amounting to sixty-three pounds five shillings and nine pence Halifax currency. Errors excepted.

(Signed) JOHN BENNETT.

John Bennett, of the Town of York, in the Home District, maketh oath and saith, that the

aforegoing account amounting to sixty-three pounds five shillings and nine pence Halifax currency, is just and true in all its particulars to the best of his knowledge and belief.

(Signed) JOHN BENNETT.

Sworn before me at York, this 20th day of July, 1805.

(Signed) WM. DUMMER POWELL, J.

Audited and approved in Council 6th August, 1805.

(Signed) PETER RUSSELL,
Presiding Councillor.

(*Examined*)
(Signed) JOHN MCGILL,
Inspector Genl. P. P. Accts.

[A true copy.]

JOHN MCGILL,
Inspector Gen. P. P. Accts.

Bennett published "The Upper Canada Almanac," containing with the matter usually found in such productions the Civil and Military Lists and the Duties, Imperial and Provincial. This work was admirably printed in fine Elzevir type, and in aspect, as well as arrangement, was an exact copy of the almanacs of the day published in London. A rival Calendar continued to be issued at Niagara entitled "Tiffany's Upper Canada Almanac." This was a roughly printed little tract, and contained popular matter in addition to the official lists. It gave in a separate and very conspicuous column in each month "the moon's place" on each day in respect to a distinct portion of the human body with prognostications accordingly. And in the "Advertisement to to the reader" it was set forth, that "in the calculation of the weather the most unwearied pains have been taken; and the calculator prays, for his honor's sake, that he may have not failed in t he least point; but as all calculation may sometimes fail in small matters, the writer continues, "no wonder is it that in this, the most important, should be at times erroneous. And when this shall unfortunately have been the case with the Upper Canada Almanac, let careful observers throw over the error the excess of that charity of which their generous souls are composed, and the all-importance of the subject requires; let them remember that the task, in all the variety and changes of climates and seasons, is arduous beyond that of reforming a vicious world, and not less than that of making a middle-sized new one."

In the number of the *Oracle* for September 28th, 1805, which is in mourning, we have the following notice of the character of Governor Hunter, who had deceased on the 23rd of the preceding August at Quebec:—"As an officer his character was high and unsullied; and at this present moment his death may be considered a great public loss. As Lieut. Governor of Upper Canada, his loss will be severely felt; for by his unremitting attention and exertions he has, in the course of a very few years, brought that infant colony to an unparalleled state of prosperity." An account is then given of the procession at the funeral. The 49th and 6th Regiments were present: also Lieut. Col. Brock, Commanding. At the grave one round was fired slowly and distinctly by eleven field pieces, followed by one round of small arms, by regiments; then a second round of artillery, followed in like manner by the small arms; and, lastly, a third round of artillery, and a third round of small arms. The mourners were, the Hon. Thomas Dunn, President of the Province (Lower Canada). Col. Bowes, Major Curry, Hon. Mr, Craigie, Col. Green, Major Robe, Capt. Gomm, Mr. William Green.

In 1813, during the war with the United States, Cameron is the printer of the official paper, which now for a time assumed the title of *The York Gazette*. Mr. John Cameron also published "The Upper Canada Almanac," from which we have already had occasion to quote, but it put in no claim to an official character. It did not contain the Civil Lists, but, as stated in the title page, "some Chinese sayings and Elegant Aphorisms." It bore as a motto the following lines:

"Ye who would mend these wicked times
And morals of the age,
Come buy a book half full of rhymes,
At three-pence York per page.
It would be money well outlaid,
So plenty money is;
Paper for paper is fair trade:
So said "Poor Richard." *Quiz.*

Among the aphorisms given is this one: "Issuers of paper-change, are entitled to thanks from the Public for the great accommodation such change affords. They might render the accommodation more extensive were they to emit a proportionate number of half-penny bills." At one place the query is put, "When will the beard be worn, and man allowed to appear with it in native dignity? And if so, how long before it will become fashionable to have it greased and powdered?" In the almanac for 1815, towards the end, the following paragraph appears: "York supernatural prices current: Turnips 1 dollar per bushel: Potatoes long at 2 ditto: Salt 20 ditto: Butter per lb. 1 ditto: Indifferent bread 1 shilling N. Y. cy. per lb.: Conscience a contraband article."

In Bennett's time the Government press was, as we have seen, set up in Mr. Cameron's house on King Street. But at the period of the war in 1812 Mr. Cameron's printing office was in a building which still exists, viz., the residence of Mr. A. Mercer on Bay Street. During the occupancy of York by the United States force, the press was broken up and the type dispersed. In the possession of Mr. Mercer may still be seen a portion of the press which on that occasion was made useless. For a short period Mr. Mercer himself had charge of the publication of the *York Gazette*.

In 1817 Dr. Horne became the editor and publisher. On coming into his hands the paper resumed the name of *Upper Canada Gazette*, but the old secondary title of *American Oracle* was dropped. To the official portion of the paper, there was nevertheless still appended abstracts of news from the United States and Europe, summaries of the proceedings in the Parliaments of Upper and Lower Canada, and much well-selected miscellaneous matter. The shape continued to be that of a small folio, and the terms were four dollars per annum in advance; and if sent by mail, four dollars and a half.

XXIX.—QUEEN STREET, DIGRESSION AT CAROLINE STREET: HISTORY OF THE EARLY PRESS CONTINUED.

In 1821 Mr. Charles Fothergill (of whom we have already spoken) became the Editor and Publisher [of the *Gazette*. Mr. Fothergill revived the practice of having a secondary title, title, which was now *The Weekly Register*; a singular choice, by the way, that being very nearly the name of Cobbett's celebrated democratic publication in London. After Mr. Fothergill came Mr. Robert Stanton, who changed the name of the private portion of the *Gazette* sheet, styling it "*The U. E. Loyalist.*"

About the year 1820 Mr. John Carey established the *Observer*, a folio of a very rustic, unkempt aspect, the paper and typography and matter being all somewhat inferior. It gave in its adherence to the government of the day, generally: at a later period it wavered. Mr. Carey was a tall, portly personage who, from his bearing and costume might readily have been mistaken for a non-conformist minister of local importance. The *Observer* existed down to about the year 1830. Between the *Weekly Register* and the *Observer* the usual journalistic feud made its appearance, which so often renders rival village newspapers ridiculous. With the *Register* a favorite sobriquet for the *Observer* is "Mother C——y." Once a correspondent is permitted to style it "The Political Weathercock and Slang Gazetteer." Mr. Carey ended his days in Springfield on the River Credit, where he possessed property.

The *Canadian Freeman*, established in 1825 by Mr. Francis Collins was a sheet remarkable for the neatness of its arrangement and execution, and also for the talent exhibited in its editorials. The type was evidently new and carefully handled. Mr. Collins was his own principal compositor. He is said to have transferred to type many of his editorials without the intervention of pen and paper, composing directly from copy mentally furnished. Mr. Collins was a man of pronounced Celtic features, roughish in outline, and plentifully garnished with hair of a sandy or reddish hue. Notwithstanding the colorless character of the motto at the head of its columns "Est natura hominum novitatis avida"—"Human nature is food of news," the *Freeman* was a strong party paper. The hard measure dealt out to him in 1828 at the hands of the legal authorities, according to the prevailing spirit of the day, with the revenge that he was moved to take—and to take successfully—we shall not here detail. Mr. Collins died of cholera in the year 1834. We have understood that he was once employed in the office of the *Gazette*; and that when Dr. Horne resigned, he was an applicant for the position of

Government Printer. The *Canadian Freeman* joined for a time in the general opposition clamour against Dr. Strachan,—against the influence, real or supposed, exercised by him over successive lieutenant-governors. But on discovering the good-humoured way in which its fulminations were received by their object, the *Freeman* dropped its strictures. It happened that Mr. Collins had a brother in business in the town with whom Dr. Strachan had dealings. This brother on some occasion thought it becoming to make some faint apology for the *Freeman's* diatribes, "O don't let them trouble you," the Doctor replied, "they do not trouble me; but, by the way, tell your brother," he laughingly continued, "I shall claim a share in the proceeds." This, when reported to the Editor, was considered a good joke, and the diatribes ceased; a proceeding that was tantamount to Peter Pindar's confession, when some one charged him with being too hard on the King: "I confess there exists a difference between the King and me," said Peter; "the King has been a good subject to me; and I have been a bad subject to his Majesty." During the period of Mr. Collins' imprisonment in 1828 for the application of the afterwards famous expression "native malignity" to the Attorney General of the day, the *Freeman* still continued to appear weekly, the editorials, set up in type in the manner spoken of above, being supplied to the office from his room in the gaol.

During the period of the early development of society in Upper Canada the Government authorities appear not only to have possessed but to have exercised the power of handling political writers pretty sharply. In the Kingston *Chronicle* of December 10th, 1820, we have recorded the sentence pronounced on Barnabas Ferguson, Editor of the Niagara *Spectator*, for "a libel on the Government." Mr. Ferguson was condemned to be imprisoned eighteen months; to stand in the pillory once during his confinement; to pay a fine of £50, and remain in prison till paid; and on his liberation to find security for seven years, himself in £500, and two sureties in £250 each. No comment is made by the *Chronicle* on the sentence, and the libel is not described. The local government took its cue in this matter from its superiors of the day in the old country. What Sir Henry Lytton Bulwer says in his sketch of the life of Cobbett helps to explain the action of the early Upper Canada authorities in respect to the press. "Let us not forget," says the writer just named, "the blind and uncalculating intolerance with which the law struggled against opinion from 1809 to 1822. Writers during this period were transported, imprisoned, and fined, without limit or conscience; and just when government became more gentle to legitimate newspapers, it engaged in a new conflict with unstamped ones. No less than 500 vendors of these were imprisoned within six years. The contest was one of life and death."

So early as 1807 there was an "opposition" paper—the *Upper Canada Guardian*. Willcocks, the editor, had been Sheriff of the Home District, and had lost his office for giving a vote contrary to the policy of the lieutenant-governor for the time being. He was returned as a member of parliament; and after having been imprisoned for breach of privilege, he was returned again, and continued to lead the reforming party. When the war of 1812 broke out the *Guardian* came to an end; its editor at first loyally bore arms on the Canadian side, but at length deserted to the enemy, taking with him some of the Canadian Militia. He was afterwards killed at the siege of Fort Erie.

The newspaper that occupies the largest space in the early annals of the press at York is the *Colonial Advocate*. Issuing first at Queenston in May 1824, it was removed in the following November, to York. Its shape varied from time to time: now it was a folio: now a quarto. On all its pages the matter was densely packed; but printed in a very mixed manner: it abounded with sentences in italics, in small capitals, in large capitals; with names distinguised in like decided manner: with paragraphs made conspicuous by rows of index hands, and other typographical symbols at top, bottom and sides. It was editorial, not in any one particular column, but throughout; and the opinions delivered were expressed for the most part in the first person. The *Weekly Register* fell foul of the *Advocate* at once. It appears that the new audacious nondescript periodical, though at the time it bore on its face the name of Queenston, was nevertheless for convenience sake printed at Lewiston on the New York side of the river. Hence it was denounced by the *Weekly Register* in language that now astonishes us, as a United States production; and as in the United States interest. "This paper of motley, unconnected, shake-bag periods" cried the Editor of the *Weekly Register*," "this unblushing, brazen-faced *Advocate*, affects to be a Queenston and Upper Canadian paper; whereas it is to all intents

and purposes, and radically, a Lewiston and genu-wine Yankee paper. How can this man of truth, this pure and holy reformer and regenerator of the unhappy and prostrate Canada reconcile such barefaced and impudent deception?' Nothing could more promote the success of the *Colonial Advocate* than a welcome like this. To account for the *Register's* extraordinary warmth, it is to be said that the *Advocate* in its first number had happened to quote a passage from an address of its Editor to the electors of the County of Durham, which seemed in some degree to compromise him as a servant of the Government. Mr. Fothergill had ventured to say "I know some of the deep and latent causes why this fine country has so long languished in a state of comparative stupor and inactivity, while our more enterprising neighbours are laughing us to scorn. All I desire is an opportunity of attempting the cure of some of the evils we labour under." This was interpreted in the *Advocate* to mean a censure upon the Executive. But the *Register* replied that these words simply expressed the belief that the evils complained of were remediable only by the action of the House of Assembly, on the well-known axiom "that all law is for the people, and from the people; and when inefficient, must be remedied or rectified by the people; and that therefore Mr. Fothergill was desirous of assisting in the great work." The end in fact was that the Editor of the *Register*, after his return to parliament for the County of Durham, did not long retain the post of King's Printer. After several independent votes in the House he was dismissed by Sir Peregrine Maitland in 1826, after which date the awkwardness of uniting with a Government Gazette a general newspaper whose editor, as a member of the House of Assembly, might claim the privilege of acting with His Majesty's opposition, came to an end. In 1826 we have Mr. Fothergill in his place in the House supporting a motion for remuneration to the publisher of the *Advocate* on the ground that the wide and even gratuitous circulation of that paper throughout Canada and among members of the British House of Commons, "would help to draw attention in the proper quarter to the country."

Here is an account of McKenzie's method in the collection of matter for his various publications, the curious multifariousness of which matter used to astonish while it amused. The description is by Mr. Kent, editor of a religious journal, entitled *The Church*, published at Cobourg in 1838. Lord Clarendon's style has been exactly caught, it will be observed: "Possessed of a taste for general and discursive reading," says Mr. Kent, "he (McK.) made even his very pleasures contribute to the serious business of his life, and, year after year, accumulated a mass of materials, which he pressed into his service at some fitting opportunity. Whenever anything transpired that at all reflected on a political opponent, or whenever, in his reading, he met with a passage that favored his views, he not only turned it to a present purpose, but laid it by, to bring it forward at some future period, long after it might have been supposed to be buried in oblivion."

The Editor of the *Advocate*, after his flight from Canada in 1837, published for a short time at New York a paper named *McKenzies Gazette*, which afterwards was removed to Rochester: its term of existence there was also brief. In the number for June, 1839, we have the following intelligence contributed by a correspondent at Toronto: A certain animus in relation to the military in Canada, and in relation to the existing Banks of the country, is apparent. "Toronto, May 24th: The 93rd Regiment is still in quarters here. The men 660 strong, all Scotchmen, enlisted in the range of country from Aberbeen to Ayrshire: a highland regiment without highlanders: few or none of Englishmen or Irishmen among them. They are a fine-looking body of men: I never saw a finer. I wished to go into the garrison, but was not permitted to do so. Few of the townspeople have that privilege. —— has made the fullest enquiries, and tells me that a majority of the men would be glad to get away if they could: they would willingly leave the service and the country. He says they are well-informed, civil and well-behaved, and that for such time as England may be compelled to retain possession of the Canadas by military force, against the wishes of the settled population he would like to have this regiment remain in Toronto. —— tells me that a few *soups* have been kept at Queenston during the winter, because if they desert it is no matter: the regulars are all at Drummondville, near the Falls, and a couple of hundred blacks at Chippewa watching them. The Ferry below the Falls is guarded by old men whose term of service is nearly out, and who look for a pension. It is the same at Malden, and in Lower Canada. The regiments Lord Durham brought were fine fellows, the flower of the English army. —— The Banks here tax the people heavily, but

they are so stupid they don't see it. All the specie goes into the Banks. I am told that the U. C. Bank had at one time £300,000 in England in Commissariat bills of Exchange: their notes in circulation are a million and a quarter of paper dollars, for all of which they draw interest from the people, although not obliged to keep six cents in their money-till to redeem them. All the troops were paid in the depreciated paper of these fraudulent bankrupt concerns, the directors of which deserve the Penitentiary: the contracts of the commissariat are paid in the same paper as a 10 per cent. shave: and the troops up at Brantford were also paid in Bank notes which the Bank did not pretend to redeem; and it would have offended Sir George [Arthur], who has a share in such speculations (as he had when in VanDieman's Land), had any one asked the dollars. Sir Allan McNab, who has risen from poverty to be president *de facto*, solicitor, directors and company of the Gore Bank, ever since its creation, is said to be terribly embarrassed for want of money. He is not the alpha and omega of the Bank now. He has quarrelled with his brother villains. The money paid to Canada from England to uphold troops to coerce the people helps the Banks." In the same number of the *Gazette* published at Rochester we have an extract from a production by Robert Gourlay himself, who in his old age paid a final visit of inspection to Canada. In allusion to a portion of Gourlay's famous work published in 1822, the extract is headed in *McKenzie's Gazette* "Robert Gourlay's 'Last Sketch' of Upper Canada." It is dated at Toronto, May 25th. Having just presented one gloomy view, we will venture to lower the reader's spirits a particle more, by giving another. Let allowance be made for the morbid mental condition of the writer, the contrast offered by the Canada of to-day will afterwards proportionably exhilarate. "What did Upper Canada gain," Gourlay asks "by my banishment; and what good is now to be seen in it? Cast an eye over the length and breadth of the land" he cries, "from Malden to Point Fortune, and from the Falls to Lake Simcoe: then say if a single public work is creditable, or a single institution as it should be. The Rideau Canal!—what is it but a monument of England's folly and waste; which can never return a farthing of interest; or, for a single day stay the conquest of the province. The Welland Canal!—Has it not been from beginning till now a mere struggle of misery and mismanagement; and from now onward, promising to become a putrid ditch. The only railway, of ten miles: with half completed; and half which cannot be completed for want of funds! The macadamised roads, all in mud; only causing an increase of wear and tear. The province deeply in debt; confidence uprooted; and banks beleaguered!—Schools and Colleges, what are they?—Few yet *painted*, though lectures on natural philosophy are *now* abundant. The Cobourg seminary outstaring all that is sanctimonious: so airy and lank that learning cannot take root in it. A college at Sandwich built before the war, but now a pig stye; and one at Toronto indicated only by an approach. The edifices of the Church!—how few worthy of the Divine presence—how many unfinished—how many fallen to decay. The Church itself, wholly militant: Episcopalians maintaining what can never be established; Presbyterians more sour than ever, contending for rights where they have none whatever: Methodists so disunited that they cannot even join in a respectable groan; and Catholic priests wandering about in poverty because their scattered and starving flocks yield not sufficient wool for the shears. One institution only have I seen praiseworthy and progressing—The Penitentiary; but that is a concentrated essence, seeing the whole province is one: and which of you, resident landholders, having sense or regard for your family, would remain in it a day, could you sell your property and be off?"

Some popular Almanacs of a remarkable character also emanated from McKenzie's press. Whilst in the United States he put forth the *Caroline Almanac*, a designation intended to keep alive the memory of the cutting out of the *Caroline* steamer from Fort Schlosser in 1837, and her precipitation over the Falls of Niagara, an act sought to be held up as a great outrage on the part of the Canadian authorities. In the Canadian Almanacs, published by him, intended for circularion especially among the country population, the object kept in view was the same as that so industriously aimed at by the *Advocate* itself, viz., the exposure of the shortcomings and vices of the government of the day. At the same time a large amount of practically useful matter and information was supplied. The earlier almanac was entitled "Poor Richard, or the Yorkshire Almanac," and the compiler professed to be one "Patrick Swift, late of Belfast, in the Kingdom of Ireland, Esq., F.R.I., Grand-nephew of the celebrated Doctor Jonathan Swift, Dean of St. Patrick's, Dublin, etc. etc. etc." This same personage was a contributor also of

many pungent and humorous things in prose and verse in the columns of the *Advocate* itself. In 1834 the Almanac assumed the following title: "A new Almanac for the Canadian True Blues; with which is incorporated The Constitutional Reformer's Text Book, for the Millenial and Prophetic Year of the Grand General Election for Upper Canada, and total and everlasting Downfall of Toryism in the British Empire, 1834." It was still supposed to be edited by Patrick Swift, Esq., who is now dubbed M.P.P., and Professor of Astrology, York.

In the extract given above from what was styled Gourlay's "Last Sketch" of Upper Canada, the query and rejoinder, "Schools and Colleges, what are they? Few yet *painted*, though lectures on Natural Philosophy are now abundant" are now unintelligible, without remark. The allusion was to an advertisement in the *Upper Canada Gazette* of Feb. 5, 1818, which Gourlay at the time of its appearance thought proper to animadvert upon and to satirize in the Niagara *Spectator*. It ran as follows: "NATURAL PHILOSOPHY.—The subscriber intends to deliver a course of Popular Lectures on Natural Philosophy, to commence on Tuesday the 17th inst., at 7 o'clock p. m., should a number of auditors come forward to form a class. Tickets of admission for the Course (price Two Guineas) may be had of William Allan, Esq., Dr. Horne, or at the School House. The surplus, if any, after defraying the current expenses, to be laid out in painting the District School. JOHN STRACHAN, York, 3rd Feb., 1818."

As was to be expected, Dr. Strachan was a standing subject of invective in all the publications of Gourlay, as well as subsequently in all those of McKenzie. Collins, Editor of the *Freeman*, became, as we have seen, reticent in relation to him; but, more or less, a fusilade was maintained upon him, in McKenzie's periodicals, as long as they issued. In McKenzie's opposition to Dr. Strachan there was possibly a certain degree of national animus springing from the contemplation of a Scottish compatriot who, after rising to position in the young colony, was disposed, from temperament, to bear himself cavalierly towards all who did not agree with him in opinion. In addition, we have been told that at an early period in an interview between the two parties, Dr. Strachan once chanced to express himself with considerable heat to McKenzie, and proceeded to the length of shewing him the door. The latter had called, as our information runs, to deprecate prejudice in regard to a brother-in-law of his, Mr. Baxter, who was a candidate for some post under the Educational Board, of which Dr. S. was chairman; when great offence was taken at the idea being for a moment entertained that a personal motive would in the slightest degree bias him when in the execution of public duty. At a late period in the history of both the now memorable Scoto-Canadians, we happened ourselves to be present at a scene in the course of which the two were brought curiously face to face with each other, once more, for a few moments. It will be remembered that after the subsidence of the political troubles and the union of Upper and Lower Canada, McKenzie came back and was returned member of Parliament for Haldimand. While he was in the occupancy of this post, it came to pass that Dr. Strachan, now Bishop of Toronto, had occasion to present a petition to the united House on the subject of the Clergy Reserves. To give greater weight and solemnity to the act he decided to attend in person at the bar of the House, at the head of his clergy, all in canonicals. McKenzie seeing the procession approaching, hurried into the House and took his seat; and contrived at the moment the Bishop and his retinue reached the bar to have possession of the floor. Affecting to put a question to the Speaker before the Order of the Day was proceeded with, he launched out with great volubility and in excited strain on the interruptions to which the House was exposed in its deliberations: he then quickly came round to an attack in particular on prelates and clergy for their meddling and turbulence, frequenting, as he averred, the lobbies of the Legislature when they should be employed on higher matters, filling with tumultuous mobs the halls and passages of the House, thronging (with an indignant glance in that direction) the very space below the bar set apart for the accommodation of peaceably disposed spectators. The House had only just assembled, and had not had time to settle down into perfect quiet: members were still dropping in, and it was a mystery to many, for a time, what could, at such an early stage of the day's proceedings, have excited the ire of the member for Haldimand. The courteous speaker, Mr. Sicotte, was plainly taken aback at the sudden outburst of patriotic fervour; and, not being as familiar with the old Upper Canadian past as many old Upper Canadians present were, he could not enter into the pleasantry of the thing; for, after all, it was humorously and not maliciously intended: the orator in possession of the floor had his old antagonist at a momentary disadvantage, and he chose to compel him while

standing there conspicuously at the bar to listen for a while to a stream of *Colonial Advocate* in the purest vein. After speaking against time, with an immense shew of heat for a considerable while—a thing at which he was an adept—the scene was brought to a close by a general hubbub of impatience at the outrageous irrelevancy of the harangue arising throughout the House, and obliging the orator to take his seat. The petition of the Bishop was then in due form received, and he, with his numerous retinue of robed clergy, withdrew.

We now proceed with our memoranda of the early press. When Fothergill was deprived of his office of King's Printer in 1825, he published for a time a quarto paper of his own, entitled the *Palladium*, composed of scientific, literary, and general matter. Mr. Robert Stanton, King's Printer after Fothergill, issued on his own account for a few years, a newspaper called *The U. E. Loyalist*, the name, as we have seen, borne by the portion of the *Gazette* devoted to general intelligence while Mr. Stanton was King's Printer. The *U. E. Loyalist* was a quarto sheet, well printed, with an engraved ornamental heading resembling that which surmounted the New York *Albion*. The *Loyalist* was conservative, as also was a local contemporary after 1831, the *Courier*, edited and printed by Mr. George Gurnett, subsequently Clerk of the Peace, and Police Magistrate for the City of Toronto. The *Christian Guardian*, a local religious paper which still survives, began in 1828. The *Patriot* appeared at York in 1833: it had previously been issued at Kingston; its whole title was "*The Patriot and Farmer's Monitor*," with the motto, "Common Sense," below. It was of the folio form, and its Editor, Mr. Thos. Dalton, was a writer of much force, liveliness and originality. The *Loyalist*, *Courier*, and *Patriot* were antagonists politically of the *Advocate* while the latter flourished; but, fighting on the side whose star throughout the civilized world was on the decline, they were unequal to the achievement of what they undertook to do.

Notwithstanding its conservatism, it was in the *Courier* that the memorable revolutionary sentiments appeared, so frequently quoted afterwards in the *Advocate* publications: "the minds of the well-affected begin to be unhinged; they already begin to cast about in their mind's eye for some new state of political existence, which shall effectually put the colony without the pale of British connexion;" words written under the irritation occasioned by the dismissal by the Crown of the Attorney and Solicitor General for Upper Canada in 1833. For a short time prior to 1837, McKenzie's paper assumed the name of *The Constitution*. A faithful portrait of McKenzie's will be seen at the beginning of the first volume of his "Life and Times," by Mr. Charles Lindsay, a work that will be carefully and profitably studied by future investigators in the field of Upper Canadian history. Excellent portraits of Mr. Gurnett and of Mr. Dalton are likewise extant in Toronto.

We have spoken once, we believe, of the *Canadian Freeman's* motto, "*Est natura hominum novitatis avida*;" and of the *Patriot's*, just above, "*Common Sense*." Fothergill's "*Weekly Register*" was headed by a brief cento from Shakspeare: "Our endeavour will be to stamp the very body of the time—its form and pressure—: we shall extenuate nothing, nor shall we set down aught in malice." Other early Canadian newspaper mottoes which pleased the boyish fancy years ago, and which may still be pleasantly read on the face of the same long-lived and yet flourishing publications, were the "*Mores et studia et populos et prælia dicam*," of the Quebec *Mercury*, and the "*Animos novitate tenebo*" of the Montreal *Herald*. The *Mercury* and *Herald* likewise retain to this day their respective early devices: the former, Hermes, all proper as the heralds would say, descending from the sky, with the motto from Virgil, *Mores et Studia et Populos et Prælia dicam:* the latter the Genius of Fame, bearing in one hand the British crown, and sounding as she speeds through the air her trump, from which issues the above-cited motto. Over the editorial column the device is repeated, with the difference that the floating Genius here adds the authority for her quotation—Ovid, *a la* Dr. Pangloss. Underneath the floating figure are many minute roses and shamrocks; but towering up to the right and left with a significant predominance, for the special gratification of Montrealers of the olden time, the thistle of Scotland. Besides these primitive mottoes and emblematic headings, the *Mercury* and *Herald* likewise retain, each of them, to this day a certain pleasant individuality of aspect in regard to type, form and arrangement, by which they are each instantly to be recognized. This adherence of periodicals to their native physiognomy is very interesting, and in fact advantageous, inspiring in readers a certain tenderness of regard. Does not the cover of *Blackwood*, for example, even the poor United States copy of it, sometimes awaken in the chaos of a public reading-room

table, a sense of affection, like a friend seen in the midst of a promiscuous crowd? The English Reviews too, as circulated among us from the United States, are conveniently recognized by their respective colours, although the English form of each has been, for cheapness sake, departed from. The *Montreal Gazette* likewise survives, preserving its ancient look in many respects, and its high character for dignity of style and ability.

In glancing back at the supply of intelligence and literature provided at an early day for the Canadian community it repeatedly occurs to us to name, as we have done, the *Albion* newspaper of New York. From this journal it was that almost every one in our Upper Canadian York who had the least tendency to read, derived a considerable portion of his or her acquaintance with the literature of the outside civilised world, as well as with the leading details of its prominent political events. As its name implies, the *Albion* was intended to meet the requirements of a large number of persons of English birth and of English descent, whose lot is cast on this continent, but who nevertheless cannot discharge from the core of their hearts their natural love for England, their natural pride in her unequalled civilization. "*Cœlum non animum mutant qui trans mare currunt*," was its gracefully-chosen and appropriate motto. Half a century ago, the boon of a judicious literary journal like the *Albion* was to dwellers in Canada a very precious one. The Quarterlies were not then reprinted as now; nor were periodicals like the Philadelphia *Eclectic* or the Boston *Living Age* readily procurable. Without the weekly visit of the *Albion*, months upon months would have passed without any adequate knowledge being enjoyed of the current products of the literary world. For the sake of its extracted reviews, tales and poetry the New York *Albion* was in some cases, as we well remember, loaned about to friends and read like a much sought after book in a modern circulating library. And happily its contents were always sterling and worth the perusal. It was a part of our own boyish experience to become acquainted for the first time with a portion of Keble's *Christian Year*, in the columns of that paper. The *Albion* was founded in 1822 by Dr. John Charlton Fisher, who afterwards became a distinguished Editor at Quebec. To him Dr. Bartlett succeeded. The New York *Albion* still flourishes under Mr. Cornwallis, retaining its high character for the superior excellence of its matter, retaining also many traits of its ancient outward aspect, in the style of its type, in the distribution of its matter. It has also retained its old motto. Its familiar vignette heading of oak branches round the English rose, the thistle of Scotland, and the shamrock, has been thinned out, and otherwise slightly modified; but it remains a fine artistic composition, well executed.

There was another journal from New York much esteemed at York for the real respectability of its character, the *New York Spectator*. It was read for the sake of its commercial and general information, rather than for its literary news. To the minds of the young the Greek revolution had a singular fascination. We remember once entertaining the audacious idea of constructing a history of the struggle in Greece, of which the authorities would, in great measure, have been copious cuttings from the *New York Spectator* columns. One advantage of the embryo design certainly was a familiarity acquired with the map of Hellas within and without the Peloponnesus. Navarino, Modon, Coron, Tripolitza, Mistra, Missolonghi, with the incidents that had made each temporarily famous, were rendered as familiar to the mind's eye as Sparta Athens, Thebes, Thermopylæ, and the events connected with each respectively, of an era two thousand years previously, afterwards from other circumstances, became. Colocotroni, Mavrocordato, Miaulis, were heroes to the imagination as fully as Miltiades, Pericles, Nicias, afterwards became.

Partly in consequence of the eagerness with which the columns of the *New York Spectator* used to be ransacked with a view to the composition of the proposed great historical work, we remember the peculiar interest with which we regarded the editor of that periodical at a later period, on falling in with him, casually, at the Falls of Niagara. Mr. Hall was then well advanced in years; and from a very brief interview, the impression received was, that he was the beau ideal of a veteran editor of the highest type; for a man, almost omniscient; unslumberingly observant; sympathetic, in some way, with every occurrence and every remark; tenacious of the past; grasping the present on all sides, with readiness, genial interest and completeness. In aspect, and even to some extent in costume, Mr. Hall might have been taken for an English bishop of the generation just passing away.

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MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—JANUARY, 1870.

Latitude—43° 39′4 *North. Longitude*—5h. 17m. 33s. *West. Elevation above Lake Ontario*, 103 *feet.*

Day.	Barom. at temp. of 32°				Temp. of the Air.				Excess of Mean above Normal	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.					Rain in Inches.	Snow in Inches
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	M'N		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result't.	M'N.		
					°	°	°	°	°																			
1	29.629	29.582	29.400	29.5340	35.3	31.6	29.8	31.93	+10.60	.170	.140	.147	.149	83	78	88	82	E	E b N	E b N	N 78 E	12.0	9.6	13.0	12.70	12.79	...	4.0
2	—	28.470	—	—	—	36.0	—	—	—	—	.196	—	—	—	93	—	—	E b N	E b N	N W b W	S 88 E	16.3	20.0	13.7	5.55	18.46	1.000	1.0
3	28.711	28.985	.206	28.9985	30.9	29.1	24.1	27.62	+ 6.37	.157	.126	.114	.131	90	78	87	86	S W b W	S W b W	W S W	S 62 W	20.5	16.5	8.5	13.82	13.83	...	0.2
4	29.232	29.234	.404	29.3207	24.8	27.7	19.4	23.53	+ 2.30	.127	.096	.087	.103	95	62	83	81	S W b W	W b N	N N W	N 76 W	6.0	10.0	6.0	5.69	6.15	...	Insp.
5	.619	.730	.583	.6370	15.4	23.3	29.5	23.28	+ 2.07	.077	.061	.129	.091	86	48	78	71	N W b W	W S W	S W b S	S 52 W	8.5	13.0	20.2	12.53	13.54	...	0.5
6	.443	.535	.683	.5797	34.5	29.1	16.5	25.55	+ 4.33	.181	.111	.076	.118	90	69	83	81	S W	N W b W	W b N	N 71 W	12.5	14.8	8.2	11.89	12.63	...	0.1
7	.759	.713	.610	.6883	14.3	19.7	16.0	16.28	— 4.93	.076	.071	.076	.073	92	66	85	81	W b S	W S W	W S W	S 76 W	4.8	9.6	3.6	5.15	6.52	...	4.0
8	.471	.515	.756	.5972	14.0	21.2	11.8	14.40	— 6.82	.074	.085	.052	.067	90	75	70	79	W b N	W b S	N W	N 65 W	6.5	12.8	27.2	10.96	11.74	...	0.3
9	—	.819	—	—	—	15.0	—	—	—	—	.075	—	—	—	80	—	—	N b W	S W	S W b S	S 47 W	3.0	12.6	17.6	10.48	10.91	...	0.2
10	.533	.404	.553	.5105	20.5	29.5	32.7	27.62	+ 6.35	.097	.137	.138	.120	79	83	75	79	S W b W	S W	W b S	S 67 W	3.5	11.0	10.2	6.94	8.64	...	0.1
11	.891	.868	.661	.7902	24.1	31.6	34.5	29.69	+ 8.33	.093	.132	.192	.140	72	74	96	82	Calm.	S E b E	E b S	S 78 E	0.0	9.0	14.0	4.50	4.78	.385	0.2
12	.493	.490	.774	.5928	34.2	36.3	26.2	31.87	+10.50	.187	.210	.124	.169	95	98	87	92	Calm.	N W b N	N b E	N 9 E	0.0	7.0	7.5	6.74	7.02	.315	2.0
13	.708	.844	30.124	.9168	14.0	6.4	1.3	6.63	—14.78	.074	.060	.043	.054	90	85	91	89	N N E	N b E	N b E	N 16 E	14.0	13.5	9.4	11.56	11.81	...	2.0
14	30.176	30.044	29.771	.9758	1.0	4.0	24.8	10.63	—10.77	.041	.047	.123	.075	88	89	92	90	N E	N E	E	N 61 E	11.0	14.5	12.8	10.65	11.35	.270	4.0
15	29.484	29.164	.406	.3526	34.2	38.5	36.0	36.06	+14.55	.185	.225	.189	.196	93	96	89	92	Calm.	Calm.	W S W	S 76 W	0.0	0.0	18.5	8.46	8.67	.172	...
16	—	.756	—	—	—	32.4	—	—	—	—	.116	—	—	—	62	—	—	W b S	S E	E	S 76 E	7.8	18.5	14.1	7.31	8.51	.350	...
17	.257	.119	.586	.3473	40.7	43.5	24.8	35.85	+14.28	.241	.278	.078	.199	95	98	58	84	E S E	S b W	W b S	S 63 W	0.8	10.0	24.4	11.42	13.43	.500	...
18	.952	30.029	30.113	30.0470	17.6	20.8	16.5	17.98	— 3.70	.083	.068	.070	.071	85	51	82	72	W S W	W	W S W	.....	11.0	16.0	...	...	...	...	...
19	30.143	30.023	29.886	30.0105	12.5	24.4	23.3	20.35	— 1.40	.067	.061	.088	.076	88	46	70	71	Calm.	S W	W b S	.....	0.0	...	...	...	...	...	...
20	29.795	29.611	.572	29.6526	24.4	33.4	31.6	30.12	+ 8.30	.110	.149	.132	.130	84	78	74	78	S W b W	S S W	W b S	.....	...	...	...	...	...	...	...
21	.775	.572	.982	.8588	24.1	25.9	17.6	21.97	+ 0.03	.114	.100	.076	.096	87	70	79	79	Calm.	W	W b N	.....	0.0	...	...	...	...	...	...
22	.934	.660	.530	.6897	19.4	33.4	37.0	31.52	+ 9.58	.093	.163	.209	.161	89	85	95	87	W b N	E	S W b S	.....	...	...	...	...	...	.420	...
23	—	.693	—	—	—	27.0	—	—	—	—	.121	—	—	—	82	—	—	W S W	N W b N	N W b N	.....	...	...	...	...	...	...	...
24	.991	.887	.649	.8243	11.4	18.3	21.9	16.72	— 5.35	.057	.080	.105	.078	77	81	90	83	N E b N	N E b N	E b N	.....	...	...	...	...	...	...	1.5
25	.264	.187	.209	.2132	20.5	24.8	28.8	25.30	+ 3.18	.099	.101	.144	.119	91	72	90	85	N E	W b S	S W b S	.....	...	2.5	10.7	...	...	...	1.0
26	.371	.536	.626	.5323	32.7	35.2	30.2	32.23	+10.06	.157	.139	.157	.151	85	68	93	83	Calm.	S W	Calm.	S 61 W	0.0	12.8	0.0	3.99	4.05	...	0.2
27	.747	.836	.881	.8305	27.7	29.1	19.4	24.19	+ 1.95	.128	.096	.087	.100	84	59	83	76	Calm.	S W b W	S W b W	S 65 W	0.0	3.0	3.2	3.26	3.40	...	...
28	.859	.859	.709	.8032	13.6	27.0	23.7	21.48	— 0.87	.073	.100	.098	.091	90	68	77	78	S W b W	Calm	S S E	S 4 E	5.0	0.0	5.8	2.11	3.27	...	...
29	.426	.296	.457	.4005	20.5	33.4	33.4	28.93	+ 6.58	.093	.149	.134	.127	85	78	70	79	Calm.	S W b W	N W b W	N 83 W	0.0	2.6	16.6	7.68	8.62	...	Insp.
30	—	.570	—	—	—	32.7	—	—	—	—	.106	—	—	—	56	—	—	W b N	Calm.	N b E	N 40 W	5.0	0.0	5.5	1.92	2.90	...	...
31	.591	.481	.426	.4940	20.1	28.4	26.2	24.90	+ 1.52	.098	.119	.116	.108	91	76	82	84	N N E	Calm.	W N W	N 56 W	3.2	0.0	1.8	3.32	3.48	...	...
	29.6253	29.5962	29.6372	29.6241	22.40	27.14	24.50	24.48	+ 2.77	.113	.119	.115	.116	87	74	83	82	.....	.....	.....	.....	5.82	9.57	11.36	...	8.96	3.412	21.3

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JANUARY, 1870.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....30.212 at 10 a.m. on 14th } Monthly range=
Lowest Barometer .....28.166 at 9h30 p.m. on 2d } 2.046 inches.

Self-registering Ther.:
- Maximum Temperature .....45°0 on 17th } Monthly range=
- Minimum Temperature.....—3°2 on 9th } 48°2
- Mean Maximum Temperature .....32°15 } Mean daily range=
- Mean Minimum Temperature .....17°58 } 14°57
- Greatest daily range.....36°2 from a.m. of 14th to a.m. of 15th.
- Least daily range ..... 2°8 from a.m. to p.m. of 21st.

Warmest Day.....15th...Mean Temperature.....30°05 } Difference=29°42
Coldest Day.....13th...Mean Temperature..... 6°63 }

Maximum Radiation. { Solar .....54°5 on 27th } Monthly range=
{ Terrestrial.....11°5 on 9th } 66°0

Aurora observed on 4 nights viz., 4th, 8th, 27th and 28th.
Possible to see Aurora on 10 nights; impossible on 18 nights.
Snowing on 18 days; depth 21.3 inches; duration of fall 112.0 hours.
Raining on 8 days; depth 3.412 inches; duration of fall 80.7 hours.
Mean of Cloudiness—0.77.

WIND.

Resultant Direction S. 89° W.; Resultant Velocity 2.63.
Mean Velocity 8.98 miles per hour.
Maximum Velocity 29.0 miles, from 7 to 8 p.m. of 17th.
Most Windy day 2d; Mean Velocity 18.40 miles per hour.
Least Windy day 30th; Mean Velocity 2.90 miles per hour.
Most Windy hour 10 p.m.; Mean Velocity 11.42 miles per hour.
Least Windy hour 6 a.m.; Mean Velocity 6.04 miles per hour.

Solar haloes on 16th and 28th. Lunar haloes on 8th, 13th, 19th, 20th and 21st.
Fog on 11th, 17th and 19th.

2nd January.—Very great diminution of atmospheric pressure, accompanied by a heavy storm of wind from the E., with rain and snow. Although the wind had veered to W.N.W. and the lateral velocity considerably decreased, the barometer did not indicate the lowest pressure till 9.30 p.m., when it read 28.166, a change of 1.283 inches from 8 a.m. of previous day, and the lowest pressure recorded at Toronto.

The record of the wind is incomplete for this month, the anemometer being under repair from the 18th to the 25th

COMPARATIVE TABLE FOR JANUARY.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velo'y	Mean Velocity
	°	°	°	°	°					°		
1842	27.9	+ 4.8	49.4	1.9	47.5	5	2.170	9	...	...	...	0.78 lbs
1843	28.7	+ 5.6	55.4	— 1.8	57.2	6	4.295	12	14.2	...	...	0.69
1844	20.2	— 2.9	45.3	— 7.2	52.5	7	3.005	11	24.9	...	...	0.70
1845	26.5	+ 3.4	45.7	— 0.2	45.9	5	Imp.	9	22.7	...	...	0.70
1846	26.7	+ 3.6	44.0	— 1.3	45.3	5	2.335	10	6.0	...	...	0.55
1847	23.3	+ 0.2	42.4	2.7	39.7	7	2.135	5	7.5	...	...	1.09
1848	28.7	+ 5.6	51.1	—11.4	62.5	7	2.245	8	7.1	N 82 W	2.03	5.62mls
1849	18.8	— 4.6	39.5	—14.2	53.7	4	1.175	10	9.2	N 63 W	3.06	6.71
1850	20.7	+ 6.6	46.4	9.9	36.5	5	1.250	8	5.2	N 37 W	0.09	5.80
1851	25.5	+ 2.4	43.4	—12.8	56.2	4	1.275	10	7.8	S 77 W	3.26	7.09
1852	18.4	— 4.7	37.3	—10.6	47.9	0	0.000	19	30.9	N 68 W	3.14	7.67
1853	23.0	— 0.1	40.9	— 9.7	50.6	1	0.290	6	7.5	N 27 W	2.52	6.34
1854	23.6	+ 0.5	46.4	— 5.4	51.8	7	1.270	11	7.5	N 77 W	2.44	6.91
1855	25.9	+ 2.8	49.0	— 5.4	54.4	5	0.525	13	23.3	N 73 W	1.91	7.20
1856	16.0	— 7.1	34.4	—12.0	46.4	0	0.000	14	13.6	N 75 W	5.24	10.89
1857	12.8	—10.3	37.2	—20.1	57.3	3	Insp	16	21.8	N 70 W	4.96	10.31
1858	30.0	+ 6.9	47.4	6.5	40.9	6	1.352	11	4.0	N 71 W	2.33	7.40
1859	26.4	+ 3.3	43.2	—26.5	69.7	6	1.449	19	16.4	S 81 W	3.17	8.76
1860	23.4	+ 0.3	46.4	— 6.8	53.2	6	0.740	16	8.7	N 89 W	6.09	9.37
1861	19.9	— 3.2	37.0	—11.2	48.2	4	0.685	23	20.6	N 86 W	2.92	9.30
1862	21.7	— 1.4	44.5	— 2.6	47.1	5	0.115	19	27.4	N 26 W	2.69	8.53
1863	28.1	+ 5.0	47.0	—14.0	61.0	10	1.122	17	20.6	N 61 W	1.18	7.23
1864	22.8	— 0.3	44.2	— 9.0	53.2	5	1.165	14	26.3	S 73 W	6.00	10.22
1865	17.7	— 5.4	37.2	— 9.0	46.2	1	0.440	18	14.8	N 85 W	4.80	9.39
1866	20.7	— 2.4	44.0	—14.0	58.0	4	0.527	19	10.3	N 76 W	2.98	9.34
1867	17.6	— 5.5	43.8	— 4.8	48.6	1	Inap	21	42.0	N 55 W	3.27	6.96
1868	19.0	— 4.1	39.0	— 7.0	46.0	2	Insp.	21	14.6	S 83 W	3.07	8.90
1869	27.7	+ 4.6	45.0	— 1.0	46.0	4	0.887	12	9.8	N 72 W	3.40	9.21
1870	24.4	+ 1.8	45.0	— 5.2	48.2	8	3.412	18	21.3	S 89 W	2.63	8.98
Results to 1869.	23.10	...	43.80	—7.04	50.84	4.37	1.165	13.53	15.77	N 78 W	3.07	8.19
Excess for '70	+ 1.35	...	+1.20	3.84	2.64	+ 3.63	+ 2.247	+ 4.47	+ 5.53	...	...	+ 0.79

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—FEBRUARY, 1870.

Latitude—43° 39′4 *North.* *Longitude*—5*h.* 17*m.* 33*s. West.* *Elevation above Lake Ontario,* 108 *feet.*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.				MEAN	Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 PM	ME'N.		6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Res'l-tant.			
					°	°	°	°	°												°							
1	29.557	29.695	29.674	29.6455	21.9	22.3	24.4	22.87	+ 0.02	.097	.073	.103	.089	82	61	78	73	N W b N	W N W	S W b S	S 69 W	10.0	10.0	4.4	1.71	7.36	...	2.5
2	.499	.486	.740	.5822	24.1	27.7	22.3	25.10	+ 2.48	.114	.128	.100	.114	87	84	83	84	S E b E	W	Calm.	N 30 E	11.4	7.2	0.0	3.48	6.90	...	2.0
3	.847	.964	30.115	.9960	11.8	15.8	13.6	13.62	— 9.05	.063	.065	.067	.064	86	74	83	80	N N E	N N E	N E b N	N 33 E	12.0	2.4	1.4	6.44	6.40	...	0.2
4	30.157	30.055	29.947	30.0443	12.9	17.9	15.8	15.17	— 7.55	.069	.091	.078	.077	89	94	88	89	N E b N	E	N N E	N 48 E	11.8	13.0	8.0	8.18	9.25	...	0.5
5	29.882	29.828	.827	29.8483	17.6	32.0	18.3	22.15	— 0.63	.089	.143	.080	.102	92	79	81	85	N b E	Calm.	Calm.	N 19 W	2.4	0.0	0.0	0.30	0.58	...	...
6	—	.761	—	—	—	30.9	—	—	—	—	.149	—	—	—	86	—	—	Calm.	Calm.	Calm.	S 83 W	0.0	0.0	0.0	0.89	0.93	...	...
7	.833	.766	.704	.7677	21.9	29.5	25.5	25.93	+ 3.03	.105	.121	.118	.116	89	74	86	83	W	S S W	S b W	S 2 E	0.5	8.7	1.2	1.42	4.48	...	...
8	.549	.387	.385	.4277	28.0	30.2	26.2	28.28	+ 5.32	.131	.112	.124	.125	86	67	87	81	N E	N	Calm.	N 10 E	9.0	12.6	0.0	5.86	6.61	...	...
9	.311	.190	.250	.2547	27.7	33.4	27.3	29.88	+ 5.85	.135	.134	.133	.132	89	70	89	84	W N W	S W b S	Calm.	N 80 W	1.2	1.0	0.0	2.79	2.91	...	0.2
10	.403	.552	.676	.5617	29.1	24.1	11.4	22.75	— 0.32	.148	.086	.062	.102	92	66	85	80	N W b W	N W b N	Calm.	N 41 W	16.4	16.0	0.0	7.56	7.76	...	inap.
11	.663	.303	.088	.3330	16.8	29.1	29.5	26.33	+ 3.17	.080	.118	.136	.117	85	73	83	81	N N E	E b S	Calm.	S 62 E	3.0	16.5	0.0	5.87	8.00	...	0.1
12	.013	.351	.630	.3655	35.6	23.7	18.3	25.08	+ 1.83	.151	.056	.068	.080	73	44	68	56	S W b S	W N W	N W	N 69 W	13.5	29.0	15.0	20.07	20.92	...	inap.
13	—	.764	—	—	—	14.7	—	—	—	—	.060	—	—	—	71	—	—	W N W	S E b S	E S E	S 65 E	2.8	2.2	9.3	4.43	5.53	...	inap.
14	.293	.065	.203	.1912	30.6	34.2	34.2	32.87	+ 9.47	.152	.185	.185	.173	89	93	93	92	E b S	S b E	S b W	S 40 W	2.6	0.5	3.6	0.60	3.30	...	0.8
15	.426	.601	.697	.5972	32.4	30.9	21.5	27.65	+ 4.15	.169	.112	.095	.116	91	64	82	75	N N W	N W b N	N	N 20 W	13.5	8.8	6.2	6.41	6.71	...	...
16	.845	.904	.958	.9052	19.4	32.0	28.8	27.38	+ 3.80	.087	.135	.137	.118	83	74	86	78	Calm.	S S W	S E	S 51 E	0.0	4.9	0.8	2.71	4.35	...	...
17	.734	.555	.392	.5305	32.4	34.2	37.0	34.53	+11.13	.160	.177	.209	.181	87	89	95	89	E	S W b S	S E b E	N 58 W	9.5	17.0	0.6	0.64	8.54	.520	3.0
18	.320	.367	.441	.3926	23.0	14.7	12.5	15.47	— 8.45	.113	.066	.067	.077	92	78	88	85	N W b N	N W b N	N N W	N 36 W	26.0	28.0	15.2	19.06	19.19	...	1.0
19	.587	.588	.491	.5430	5.3	12.7	13.6	10.98	—12.92	.046	.060	.072	.062	82	76	90	83	N N W	E S E	N N E	N 49 E	9.0	5.0	14.5	8.34	9.92	...	3.5
20	—	.610	—	—	—	12.9	—	—	—	—	.063	—	—	—	80	—	—	N W b N	N W b W	N W W	N 40 W	15.2	15.4	6.6	10.10	10.58	...	...
21	.666	.603	.624	.6253	5.5	7.5	4.9	2.92	—21.30	.032	.043	.045	.041	93	69	82	82	W b S	W N W	W S W	N 83 W	1.7	24.0	7.4	11.80	12.34	...	0.3
22	.575	.469	.402	.4742	6.8	15.2	12.5	11.65	—12.67	.051	.054	.062	.055	86	62	80	74	S W b W	W b S	W S W	S 72 W	5.4	23.2	8.2	12.73	12.86	...	...
23	.820	.255	.294	.2850	9.3	21.9	19.4	17.45	— 7.03	.063	.065	.087	.077	96	54	83	80	W S W	W S W	Calm	S 82 W	5.2	11.0	0.0	6.20	7.14	...	...
24	.351	.439	.533	.4522	15.8	10.0	3.5	9.40	—15.22	.079	.043	.042	.054	88	61	80	78	N	N W b N	Calm.	N 34 W	4.0	20.0	0.0	10.67	10.93	...	inap.
25	.445	.284	.337	.3548	11.1	30.2	23.0	22.02	— 2.78	.060	.098	.092	.085	83	58	73	71	W S W	W b S	W b N	S 86 W	6.2	18.5	1.8	8.02	9.03	...	...
26	.475	.436	.371	.4265	17.6	26.6	27.7	24.38	— 0.62	.087	.091	.121	.103	92	62	80	79	N	Calm.	N E	N 75 E	4.6	0.0	2.6	4.66	5.58	...	1.5
27	—	28.922	—	—	—	28.8	—	—	—	—	.158	—	—	—	100	—	—	E b N	E	N E	N 81 E	29.2	21.5	10.7	13.97	15.05	inap.	4.5
28	.029	29.090	.292	.1518	24.1	29.8	21.2	24.12	— 1.28	.120	.147	.092	.116	93	88	81	88	Calm	Calm.	Calm.	N 50 W	0.0	0.0	0.0	3.33	3.52	...	inap.
M	29.5325	29.5099	29.5446	29.5315	19.57	24.40	20.52	21.54	— 2.10	.100	.100	.099	.099	88	71	83	80	.....	.....	.....	.....	8.07	11.30	4.20	.....	8.10	2.050	20.1

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR FEBRUARY, 1870.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....30.175 at 8 a.m. on 4th. } Monthly range=
Lowest Barometer.....28.900 at 4 p.m. on 27th. } 1.275 inches.

Self-registering Ther.

Maximum temperature.....40°6 on 17th. } Monthly range=
Minimum temperature.....—6°6 on 21st. } 47°2
Mean maximum temperature.....28°02 } Mean daily range=
Mean minimum temperature.....14°74 } 13°28
Greatest daily range.....33°2 from a.m. to p.m. of 25th.
Least daily range.....3°5 from a.m. to p.m. of 20th.

Warmest day.....17th; mean temperature.....31°83 } Difference=31°91.
Coldest day.....21st; mean temperature.....2°92 }

Maximum Radiation { Solar.....56°2 on 6th. } Monthly range=
Terrestrial.....—16°5 on 21st. } 72°7.

Aurora observed on 1 morning, viz.:—12th.

Possible to see Aurora on 10 nights; impossible on 18 nights.

Snowing on 18 days; depth 20.1 inches; duration of fall, 96.3 hours.

Raining on 2 days; depth, 0.520 inches; duration of fall, 9.7 hours.

Mean of cloudiness=0.73.

WIND.

Resultant direction, N. 29° W.; resultant velocity, 2.84.

Mean velocity, 8.10 miles per hour.

Maximum velocity, 32.7 miles, from 7 to 8 a.m. of 27th.

Most windy day, 12th; mean velocity, 20.92 miles per hour.

Least windy day, 5th; mean velocity, 0.58 miles per hour.

Most windy hour, 1 p.m.; mean velocity, 11.09 miles per hour.

Least windy hour, 10 p.m.; mean velocity, 4.57 miles per hour.

Solar haloes on 3rd, 5th, 7th, 12th, 19th, 21st and 26th. Those of the 19th and 26th being very brilliant and accompanied by mock suns.

Lunar haloes on 5th, 7th and 16th.

Fog on 6th, 7th, 14th, and 17th.

12th, 5.40 a.m., brilliant auroral display, accompanied by a considerable magnetic disturbance.

COMPARATIVE TABLE FOR FEBRUARY.

YEAR	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	V'locity.	Mean Velocity.
	°	°	°	°	°					°		
1842	26.9	+ 3.9	50.2	— 2.0	47.3	8	3.625	9	...	...	...	1.03 lbs.
1843	14.5	— 8.5	38.5	— 9.4	47.9	1	0.475	21	14.4	...	...	4.05
1844	26.0	+ 3.0	47.9	0.6	47.3	4	0.430	7	10.0	...	...	0.43
1845	26.0	+ 3.0	49.1	— 4.2	53.3	5	impr	9	19.0	...	...	0.99
1846	20.4	— 2.6	41.9	—16.7	58.6	0	0.000	13	46.1	...	...	0.65
1847	21.5	— 1.5	40.9	0.0	40.9	2	0.550	13	27.3	...	...	0.69
1848	26.6	+ 3.6	46.6	0.0	46.6	4	0.775	8	10.8	N 65 W	2.53	5.69 ms.
1849	19.5	— 3.5	40.6	— 9.8	50.4	2	0.240	13	19.2	N 41 W	1.48	6.58
1850	26.0	+ 3.0	49.6	2.2	47.4	7	1.235	9	23.1	N 80 W	3.43	7.61
1851	27.6	+ 4.6	50.2	2.0	48.2	7	2.600	4	2.4	N 64 W	1.99	6.94
1852	23.4	+ 0.4	41.2	— 6.2	47.4	3	0.650	11	13.0	S 75 W	3.34	6.42
1853	24.1	+ 1.1	43.4	— 1.4	44.8	4	1.030	15	12.6	N 49 W	2.51	7.30
1854	21.1	— 1.9	42.8	—10.8	53.6	5	1.400	15	18.0	N 7 W	1.73	6.91
1855	15.4	— 7.6	39.0	—25.4	64.4	2	1.770	14	21.8	N 40 W	1.34	8.17
1856	15.7	— 7.3	37.8	—18.7	56.5	0	0.000	8	9.7	N 81 W	7.79	10.71
1857	28.5	+ 5.5	52.4	— 5.9	58.3	11	3.050	11	11.7	S 78 W	3.68	9.82
1858	17.0	— 6.0	42.4	— 7.3	49.7	1	insp	16	26.7	N 72 W	3.22	9.12
1859	26.0	+ 3.0	46.2	2.1	44.1	6	0.455	14	8.3	N 54 W	2.72	8.50
1860	22.8	— 0.2	50.2	— 8.5	58.7	7	1.330	13	18.8	N 61 W	3.28	8.73
1861	20.1	+ 3.1	46.0	—20.8	66.8	4	0.815	17	29.7	N 77 W	3.86	10.58
1862	22.5	— 0.5	37.8	— 5.2	43.0	3	0.180	17	23.1	N 55 W	3.93	8.52
1863	22.4	— 0.6	41.5	—19.8	61.3	7	1.450	12	22.0	N 23 W	2.27	10.13
1864	24.3	+ 1.3	45.0	—15.0	60.0	2	0.397	14	9.5	S 84 W	6.48	10.11
1865	22.4	— 0.6	42.2	—10.0	52.2	5	0.810	11	16.8	N 23 W	3.96	8.23
1866	22.5	— 0.5	45.0	— 8.0	53.0	3	0.880	12	16.9	S 80 W	5.14	9.40
1867	28.9	+ 5.9	44.0	0.2	43.8	8	1.325	13	13.4	N 57 W	1.58	8.85
1868	17.2	— 5.8	45.0	—11.5	56.5	1	0.040	16	32.8	N 60 W	3.28	10.84
1869	25.0	+ 2.0	46.0	— 1.0	47.0	2	0.165	19	39.7	N 34 W	4.18	10.04
1870	21.5	— 1.5	40.6	— 6.6	47.2	2	0.520	18	20.1	N 29 W	2.84	8.10
Results to 1869.	23.02	.....	44.59	—7.21	51.80	4.10	0.987	12.30	19.14	N 67 W	3.11	8.60
Exc. for	—1.48	.....	—3.99	+0.61	—4.6	— 2.10	— 0.417	+ 5.70	+ 0.96	...	...	— 0.50

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETIC OBSERVATORY, TORONTO, ONTARIO,—MARCH, 1870.

Latitude—43° 39′4 *North*. *Longitude*—5*h*. 17*m*. 33*s*. *West*. *Elevation above Lake Ontario*, 108 *feet*.

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind			Result't.	Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6. A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	M'N		6 A.M.	2 P.M.	10 P.M	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result't.	MEN.		
					°	°	°	°	°												°							
1	.333	29.300	29.421	29.3607	23.0	29.8	15.0	22.67	— 2.90	.106	.133	.075	.103	86	80	87	83	Calm.	W b S	N W	N 59 W	0.0	10.2	16.8	9.92	10.92	...	0.2
2	.529	.627	.749	.6482	14.0	17.2	11.4	14.12	—11.68	.071	.068	.062	.066	87	72	85	81	N W b N	N N W	W b S	N 45 W	16.8	17.4	8.0	12.27	12.87	...	insp.
3	.893	.965	.896	.9122	6.8	20.1	12.9	14.15	—11.87	.051	.059	.063	.060	86	55	80	73	N W b N	N W	N W	N 25 W	8.0	3.0	3.0	3.89	4.46	...	...
4	.724	.594	.683	.6642	20.5	24.1	21.5	22.03	— 3.32	.081	.120	.104	.109	73	93	90	88	N E	N E	N E	N 67 E	6.8	12.6	4.6	8.17	8.56	...	0.3
5	.754	.774	.816	.7840	21.2	30.6	25.9	25.78	— 0.73	.105	.123	.120	.116	93	72	86	84	N E	W b N	S W b W	N 55 W	2.0	2.0	4.8	2.22	4.09	...	insp.
6	—	.611	—	—	—	29.1	—	—	—	—	.126	—	—	—	78	—	—	N b W	E b N	E	N 71 E	4.2	15.0	15.7	11.73	12.63	...	2.5
7	.376	.418	.510	.4412	21.9	28.4	25.1	25.38	— 1.62	.106	.134	.116	.115	90	86	86	84	N E	N N E	N N W	N 22 E	15.0	6.2	0.5	4.83	5.44	...	0.0
8	.551	.617	.689	.6290	21.5	28.0	16.5	21.48	— 5.82	.104	.117	.076	.095	90	76	83	81	N N W	N W b N	N N W	N 34 W	3.8	12.0	1.0	6.60	6.98	...	...
9	.729	.680	.710	.7027	11.8	29.8	24.4	22.55	— 5.00	.063	.096	.110	.093	86	58	84	77	W N W	W b S	W b S	S 73 W	2.0	14.6	3.2	5.73	7.20	...	0.0
10	.547	.555	.721	.6130	27.7	27.0	12.5	21.97	— 5.90	.141	.100	.067	.100	94	68	88	81	Calm.	N b W	N N W	N 13 W	0.0	9.8	15.0	8.44	9.48	...	1.0
11	.697	.589	.569	.6107	10.4	15.6	12.2	12.77	—15.37	.067	.081	.065	.067	80	91	86	85	N N E	N E b E	N N E	N 42 E	7.6	11.6	10.2	10.12	10.25	...	0.0
12	.516	.390	.138	.3243	11.4	16.9	21.5	16.97	—11.50	.062	.084	.095	.082	85	90	82	86	N E	N E b E	E N E	N 59 E	13.2	14.5	20.5	17.54	17.64	...	6.0
13	—	.009	—	—	—	25.5	—	—	—	—	.118	—	—	—	86	—	—	E N E	E N E	N N E	N 40 E	20.6	10.0	7.5	10.56	11.60	...	9.0
14	.641	.705	.759	.7082	25.5	32.0	19.7	25.76	— 3.33	.125	.099	.083	.096	91	54	78	70	N b E	S E	E N E	N 52 E	9.8	6.0	4.2	3.18	4.44	...	...
15	.713	.357	.372	.5333	17.6	31.3	31.3	27.98	— 1.43	.083	.144	.166	.136	85	81	94	87	N E	E b N	S E b E	N 66 E	5.2	20.0	19.8	13.55	17.02	...	10.0
16	.337	.128	.012	.1610	14.7	17.6	18.3	17.63	—12.12	.078	.088	.087	.087	93	92	87	89	S W b W	W b N	W b S	N 81 W	9.5	19.0	5.6	9.29	12.31	...	10.0
17	.103	.248	.416	.2753	22.4	37.1	33.8	32.65	+ 2.57	.113	.147	.115	.135	94	67	58	73	E N E	N	N N W	N 10 W	5.0	20.0	17.0	14.04	14.96	...	1.5
18	.593	.703	.783	.7037	24.1	34.2	23.3	28.46	+ 4.08	.100	.068	.080	.083	77	44	64	58	N N W	N W	N W b N	N 42 W	17.0	9.2	4.2	8.13	8.51	...	...
19	.841	.790	.704	.7745	16.8	34.2	32.4	28.60	— 2.17	.064	.110	.153	.110	59	55	83	66	W N W	S S W	S	S 28 W	4.0	5.2	3.0	1.82	2.85	...	...
20	—	.421	—	—	—	38.1	—	—	—	—	.179	—	—	—	77	—	—	S E b S	E S E	E S E	S 62 E	4.1	5.0	2.9	3.94	4.02	0.205	...
21	.245	.376	.558	.4112	36.7	38.5	34.5	36.38	+ 4.92	.206	.182	.165	.183	94	78	82	84	S W b W	W S W	W b N	S 84 W	15.0	10.6	9.6	8.04	8.49	...	...
22	.604	.635	.769	.6827	33.1	34.9	27.3	31.17	— 0.67	.167	.138	.126	.142	88	68	84	81	W b S	W N W	N W b W	N 54 W	4.0	12.6	14.0	11.63	12.11	.2	0.2
23	.814	.958	30.058	.9540	23.0	30.2	26.6	26.25	— 5.93	.106	.091	.091	.093	86	54	62	67	N W	N W b N	N W b W	N 42 W	25.8	28.2	18.2	19.38	19.56	...	...
24	30.105	30.122	30.113	30.1182	24.8	36.3	25.9	29.23	— 3.33	.105	.106	.078	.090	79	49	56	56	N	N W b N	N W b N	N 14 W	6.6	14.8	11.0	8.65	9.17	...	...
25	30.147	30.118	30.032	30.0918	10.7	27.3	28.7	25.97	— 6.97	.071	.097	.130	.103	66	65	82	72	N W b N	N N W	Calm.	N 80 E	7.8	1.5	0.0	8.42	8.58	...	...
26	29.898	29.746	29.592	29.7250	27.3	33.4	35.0	32.55	— 0.75	.126	.134	.160	.144	84	70	77	78	Calm.	E b N	E b N	N 81 E	0.0	14.5	16.6	15.86	15.94	.550	3.5
27	—	.266	—	—	—	31.3	—	—	—	—	.175	—	—	...	99	—	—	E	E N E	E b N	N 79 E	17.6	19.3	13.5	15.95	16.25	...	16.0
28	.174	.267	.450	.3043	32.7	38.1	36.0	35.67	+ 1.62	.165	.179	.180	.176	88	77	85	84	N	N W b N	N W b N	N 28 W	6.6	14.8	11.0	9.38	9.84	...	0.5
29	.546	.683	.781	.6802	35.5	41.4	32.4	36.37	+ 1.92	.189	.178	.161	.174	92	67	87	81	N W b N	N N W	Calm.	N 21 W	7.8	1.5	0.0	1.57	1.91	...	...
30	.816	.757	.722	.7683	33.8	36.7	36.7	36.33	+ 1.52	.173	.188	.188	.185	89	86	86	86	Calm.	E b N	E b N	N 78 E	0.0	14.5	16.6	12.90	12.92	...	...
31	.764	.800	.831	.8055	38.1	41.4	40.3	39.70	+ 4.52	.195	.187	.201	.193	85	72	80	79	E b N	E	E N E	N 77 E	12.0	18.8	7.5	12.69	12.75	...	...
	29.6293	29.6345	29.6605	29.6440	22.77	30.08	25.25	26.27	— 3.70	.111	.121	.115	.116	85	71	81	78	.....	.....	.....	.....	8.32	12.08	9.21	.....	10.15	0.755	62.4

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR MARCH, 1870.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....30.174 at 8 a.m. on 25th. } Monthly range—
Lowest Barometer.....28.881 at 8 a.m. on 13th. } 1.293.

Self-registering Ther.
- Maximum Temperature.....44°0 on 29th & 31st. } Monthly range—
- Minimum Temperature .....5°2 on 3rd. } 38°8.
- Mean Maximum Temperature .....32°97. } Mean daily range—
- Mean Minimum Temperature .....20°46. } 12°51.
- Greatest daily range.....26°4 from a.m. to p.m. of 19th.
- Least daily range ..... 4°0 from a.m. to p.m. of 22nd.

Warmest day.....31st ...Mean Temperature.....39°70. } Difference—26°93.
Coldest day .....11th...Mean Temperature.....12°77. }

Maximum Radiation. { Solar ..... 68°0 on 29th. / Terrestrial ..... —4°4 on 3rd. } Monthly range— 72°4.

Aurora observed on 6 nights, viz.: 1st, 2nd, 8th, 23rd, 24th and 30th.

Possible to see Aurora on 12 nights; impossible on 19 nights.

Snowing on 18 days; depth 62.4 inches; duration of fall 141.5 hours.

Raining on 2 days; depth 0.755 inches; duration of fall 16.2 hours.

Mean of Cloudiness=0.68.

WIND.

Resultant Direction N. 18° E.; Resultant Velocity 4.73.

Mean Velocity 10.15 miles per hour.

Maximum Velocity 28.5 miles, from 1 to 2 p.m. of 23rd.

Most Windy day 23rd; Mean Velocity 19.55 miles per hour.

Least Windy day 29th; Mean Velocity 1.91 miles per hour.

Most Windy hour 3 p.m; Mean Velocity 12.15 miles per hour.

Least Windy hour 11 p.m.; Mean Velocity 8.60 miles per hour.

Solar haloes on the 5th, 8th, 14th, 15th, 19th, 20th and 25th.

Lunar haloes on the 9th and 10th. March 13th. crows noisy.

29th. Robins numerous, these birds have been more or less numerous all winter in the neighbourhood.

The amount of snow will be seen from the comparative table, to have been unprecedented. The amount for the winter, 1869-70, is the heaviest on record, 123.4 being nearly double the average fall, 66.3.

COMPARATIVE TABLE FOR MARCH.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge.	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Vel'y	Mean Velocity.
	°		°	°	°					°		
1842	35.8	+ 6.2	70.3	15.1	55.2	4	3.150	8	...	...	...	0.70 lbs
1843	21.3	— 8.3	39.9	— 2.5	42.4	2	0.625	18	25.7	...	...	1.18
1844	31.5	+ 1.7	50.8	9.6	41.2	8	2.470	8	14.0	...	...	0.57
1845	35.4	+ 5.8	62.7	6.6	56.1	5	Inapp.	8	2.8	...	...	0.66
1846	33.1	+ 3.5	49.6	8.3	41.3	9	1.965	5	2.3	...	...	0.30
1847	26.2	— 3.4	43.9	5.6	38.3	5	0.850	6	4.2	...	...	0.71
1848	28.6	— 1.0	58.6	0.0	58.6	5	1.220	6	9.7	N 66 W	2.03	5.80mls
1849	33.5	+ 3.9	53.0	15.1	37.9	7	1.525	2	2.3	N 3 W	1.48	5.57
1850	29.8	+ 0.2	46.5	7.2	39.3	2	0.745	7	11.2	N 52 W	2.62	7.62
1851	32.4	+ 2.8	59.3	12.0	47.3	3	0.770	9	8.8	N 21 W	1.93	7.65
1852	27.7	— 1.9	44.8	— 7.4	52.2	8	3.080	12	19.5	N 8 W	0.71	5.81
1853	30.6	+ 1.0	56.3	0.0	56.3	6	1.080	8	7.1	N 58 W	2.60	5.96
1854	30.7	+ 1.1	55.1	7.4	47.7	9	2.425	3	2.8	N 53 W	3.39	8.03
1855	28.5	— 1.1	49.4	— 2.9	52.3	5	1.485	11	18.1	N 88 W	4.76	9.95
1856	23.1	— 6.5	41.4	—14.0	55.4	0	0.000	12	16.2	N 71 W	7.65	11.39
1857	27.8	— 1.8	57.6	— 5.5	63.1	4	0.335	15	11.3	N 63 W	6.63	10.84
1858	28.4	— 1.2	55.4	— 5.5	60.9	10	0.917	6	0.2	N 58 W	5.45	8.56
1859	36.3	+ 6.7	54.2	9.8	44.4	15	4.054	8	1.0	N 64 W	1.96	10.39
1860	34.5	+ 4.9	67.0	12.8	54.2	5	0.882	11	2.4	N 64 W	7.61	12.41
1861	26.9	— 2.7	47.4	— 5.2	52.6	8	2.125	14	7.1	N 54 W	4.33	10.56
1862	28.8	— 0.8	43.2	8.0	35.2	8	2.560	11	18.5	N 12 W	2.50	9.38
1863	25.8	— 3.8	42.2	— 4.0	46.2	4	0.087	17	11.4	N 27 W	2.62	9.27
1864	29.1	— 0.5	50.2	3.0	47.2	9	1.620	12	3.7	N 53 W	2.29	8.41
1865	33.6	+ 4.0	55.6	— 3.5	59.1	10	3.050	12	18.9	N 61 W	2.16	8.80
1866	27.6	— 2.0	45.8	7.5	38.3	8	1.915	18	7.2	N 73 W	0.84	11.51
1867	26.6	— 3.0	46.8	3.0	43.8	6	0.617	14	33.4	N 34 W	2.12	8.52
1868	31.3	+ 1.7	59.0	—15.6	74.6	7	2.660	5	4.2	N 21 W	2.12	8.58
1869	23.1	— 6.5	46.8	— 5.4	52.2	3	0.985	9	15.0	N 52 W	2.86	8.02
1870	26.3	— 3.3	44.0	5.2	38.8	2	0.755	18	62.4	N 18 E	4.73	10.15
Results to 1869.	29.63	...	51.83	2.13	49.76	6.27	1.607	9.67	10.33	N 56 W	3.29	8.77
Excess for '70	— 3.36	...	— 7.89	+ 3.07	— 10.96	— 4.27	— 0.852	+ 8.33	+ 52.07	...	...	+ 1.38

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—APRIL, 1870.

Latitude—43° 39′4 *North.* *Longitude*—5h. 17m. 33s. *West.* *Elevation above Lake Ontario, 108 feet.*

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Humidity of Air.				Direction of Wind.			Resultant.	Velocity of Wind.				Rain in Inches.	Snow in Inches.
	A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 PM	M'N.		6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M		6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN		
					°	°	°	°	°																			
1	29.802	29.788	29.734	29.7732	40.5	47.2	42.8	43.38	+ 7.78	.124	.102	.118	.116	49	30	41	41	E b N	E N E	E N E	N 66 E	15.5	12.4	10.4	11.96	12.06	...	...
2	.690	.696	.663	.6830	42.8	50.8	47.9	46.76	+10.77	.108	.108	.093	.107	39	29	27	33	N E b E	E N E	N E b N	N 40 E	11.8	5.2	13.5	8.71	9.50	...	...
3	—	.772	—	—	—	43.9	—	—	—	—	.172	—	—	—	59	—	—	N N E	N N W	N N E	N 7 E	16.8	10.6	6.3	7.49	7.73	...	...
4	.761	.688	.652	.6903	32.0	41.4	35.6	35.90	− 0.88	.092	.091	.149	.120	51	34	72	58	N	N	N W b N	N 3 W	13.4	10.5	3.8	8.44	9.61	...	0.1
5	.542	.610	.668	.6103	34.5	38.1	38.1	36.90	− 0.22	.107	.187	.195	.163	52	81	85	73	N N W	N b E	N b W	N 4 W	12.8	11.0	3.2	5.58	5.80	.080	inapp.
6	.634	.652	.666	.6495	37.4	46.1	38.8	40.35	+ 2.83	.187	.234	.186	.197	84	75	79	78	N b W	W b N	Calm.	N 57 W	2.6	3.0	0.0	0.97	2.12	...	...
7	.620	.636	.675	.6442	35.6	52.9	37.4	42.70	+ 4.89	.177	.137	.144	.152	85	33	64	58	Calm.	N W b N	N N W	N 27 W	0.0	13.3	14.2	6.14	6.23	...	...
8	.749	.762	.746	.7518	32.7	54.0	38.1	43.75	+ 5.43	.143	.208	.153	.169	76	50	66	59	N N W	S W b W	S W b W	S 79 W	3.4	3.5	2.6	1.89	2.31	...	...
9	.759	.744	.740	.7468	32.7	57.6	41.4	45.38	+ 6.68	.135	.140	.187	.160	73	29	72	55	W S W	E b S	E N E	N 73 E	1.0	4.2	8.2	4.28	5.02	...	...
10	—	.708	—	—	—	51.5	—	—	—	—	.145	—	—	—	38	—	—	N E b E	E N E	E	N 72 E	8.1	11.6	9.0	8.12	8.21	...	...
11	.614	.590	.575	.5868	37.8	50.4	45.0	44.38	+ 4.97	.183	.236	.258	.226	80	64	86	75	Calm.	E b N	N W b N	N 30 W	0.0	0.8	11.4	3.41	3.80	...	...
12	.590	.668	.718	.6682	39.6	49.3	38.1	42.45	+ 2.62	.159	.155	.187	.161	64	44	81	61	N W b N	N W b N	N	N 31 W	17.8	28.4	2.2	12.50	12.81	...	...
13	.714	.609	.531	.6142	33.4	43.2	40.7	40.95	+ 0.77	.134	.198	.213	.187	70	70	84	72	N	E	E N E	N 79 E	2.5	7.6	3.8	3.84	4.43	...	...
14	.526	.507	.558	.5252	40.7	63.7	52.6	55.88	+13.27	.223	.364	.353	.315	87	61	89	75	N N E	S W b W	Calm.	S 57 W	0.5	9.0	0.0	2.55	3.74	.025	...
15	—	.689	—	—	—	46.8	—	—	—	—	.216	—	—	—	67	—	—	E	E b N	E	N 81 E	15.0	16.6	10.0	13.73	13.78	...	...
16	.580	.525	.551	.5468	44.6	50.0	46.1	47.46	+ 6.08	.255	.243	.234	.244	86	67	75	74	E N E	E b N	E S E	N 81 E	11.2	13.0	2.8	8.76	9.38	.030	...
17	—	.458	—	—	—	38.5	—	—	—	—	.216	—	—	—	93	—	—	E b S	E N E	E b N	N 78 E	4.5	16.6	16.5	17.03	17.24	.720	...
18	.338	.273	.283	.2920	42.8	54.4	54.4	51.62	+ 9.57	.240	.341	.362	.323	87	80	86	84	E N E	N E b E	N E b E	N 61 E	20.4	18.6	18.6	16.39	16.44	.460	...
19	.288	.201	.331	.3018	48.6	43.5	41.7	44.98	+ 2.55	.312	.278	.255	.281	91	98	96	93	N E	E b S	E	N 84 E	8.0	2.8	10.6	5.62	5.82	.120	...
20	.277	.301	.362	.3137	42.1	40.3	40.3	41.07	− 1.7	.259	.236	.219	.240	96	95	87	93	Calm.	S E	Calm.	S 78 E	0.0	0.0	0.0	1.82	1.92	.260	...
21	.409	.497	.551	.4887	41.7	43.5	40.7	42.15	− 1.03	.228	.240	.223	.229	86	85	87	85	N E	S b E	Calm.	S 88 E	2.5	1.5	0.0	0.64	1.88	...	...
22	.590	.568	.546	.5592	39.2	52.6	43.9	45.93	+ 2.38	.223	.259	.218	.230	94	65	75	77	Calm.	S S W	E b N	S 54 E	0.0	4.0	3.0	1.22	2.78	...	...
23	.573	.612	.655	.6138	41.0	57.6	45.4	48.00	+ 4.93	.218	.276	.263	.253	85	58	86	76	Calm.	S S E	Calm.	S 59 E	0.0	2.4	0.0	0.89	1.04	...	...
24	—	.643	—	—	—	62.7	—	—	—	—	.104	—	—	—	56	—	—	Calm.	S E b E	N E b N	N 23 E	0.0	6.4	13.0	7.42	8.80	.450	...
25	.842	.942	.956	.9213	39.2	52.2	39.9	43.27	− 1.40	.173	.153	.110	.146	72	38	44	50	N	N W	N W b N	N 9 W	18.2	9.0	4.6	5.79	7.10	...	...
26	.928	.819	.720	.8117	35.3	59.8	42.1	47.06	+ 1.98	.163	.246	.195	.204	79	47	72	64	Calm.	S S W	Calm.	S 29 W	0.0	10.0	0.0	4.80	5.01	...	...
27	.667	.517	.339	.4333	40.3	57.6	48.9	49.65	+ 4.23	.176	.204	.208	.202	69	42	59	56	Calm.	S E b E	E S E	S 18 W	0.0	4.7	0.5	2.66	4.08	inap.	...
28	.302	.558	.742	.5027	31.5	50.0	38.1	45.38	− 0.38	.283	.156	.169	.180	74	42	74	59	N W	W b N	N b W	N 41 W	26.4	16.2	2.0	13.42	14.56	..	...
29	.817	.761	.693	.7520	37.8	47.9	38.1	42.88	− 3.22	.157	.155	.169	.160	69	48	74	58	N b E	S b W	N b E	S 42 E	6.4	5.6	1.6	1.17	3.35	...	...
30	.670	.625	.547	.6110	37.8	55.4	49.3	48.37	+ 1.88	.128	.192	.273	.201	60	43	77	59	Calm.	S S E	S W b W	S 23 W	0.0	4.8	2.4	3.57	4.35	...	...
	29.6113	29.6096	29.6081	29.6088	39.26	50.38	42.62	44.58	+ 3.49	.184	.206	.205	.198	74	56	74	67	.....	.....	.....	.....	7.29	8.99	5.79	...	7.03	2.145	0.1

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....29.956 at 10 p. m. on 25th. } Monthly range—
Lowest Barometer.....29.273 at 2 & 4 p. m. on 18th. } 0.683

Self-registering Ther.
- Maximum temperature .....67°0 on 14th. } Monthly range—
- Minimum temperature .....29°6 on 8th. } 37°4
- Mean maximum temperature .....53°51 } Mean daily range—
- Mean minimum temperature.....36°50 } 17°01
- Greatest daily range.....29°6 from a.m. to p.m. of 26th.
- Least daily range..... 7°0 from a.m. to p.m. of 5th.

Warmest day..... 14th; mean temperature 53°83 } Difference—17°93
Coldest day..... 4th; mean temperature 35°90 }

Maximum Radiation
- Solar.....84°0 on 14th. } Monthly range—
- Terrestrial.....19°0 on 8th. } 65°C

Aurora observed on 11 nights, viz.: 1st, 2nd, 5th, 7th 8th 12th, 21st 22nd, 25th, 26th & 29th.

Possible to see aurora on 18 nights; impossible on 12 nights.

Snowing on 2 days; depth, 0.1 inches; duration of fall, 3.2 hours.

Raining on 9 days; depth, 2.145 inches; duration of fall, 68.3 hours.

Mean of cloudiness=0.56.

WIND.

Resultant direction, N. 34° E.; Resultant velocity, 4.13.

Mean velocity, 7.03 miles per hour.

Maximum velocity, 30.0 miles, from 7 to 8 a.m. of 28th.

Most windy day, 17th; mean velocity, 17.24 miles per hour.

Least windy day, 23rd; mean velocity, 1.04 miles per hour.

Most windy hour, 10 a.m.; mean velocity, 9.68 miles per hour.

Least windy hour, 8 p.m.; mean velocity, 5.04 miles per hour.

Solar haloes recorded on 4th, 10th, 11th, 13th, 14th, 22nd, and 30th.

Lunar haloes on 10th.

Fog recorded on 14th, 19th, and 20th.

First thunder storm of year on 13th.

24th. Thunder storm at 7 p.m.

5th. Last snow of season.

14th. Frogs heard.

10th. Woodpeckers numerous.

22nd. Swallows seen.

COMPARATIVE TABLE FOR APRIL.

YEAR.	TEMPERATURE. Mean.	Excess above Average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	V'locity.	Mean Velocity.
	°	°	°	°	°					°		
1842	43.7	+ 2.7	69.8	20.1	69.7	8	3.740	2	...	...	...	0.57 lbs
1843	40.9	— 0.1	71.6	14.7	56.9	7	3.185	3	0.1	...	...	0.46
1844	47.5	+ 6.5	74.6	14.9	59.7	10	1.515	1	inap.	...	...	0.24
1845	42.1	+ 1.1	66.7	15.5	51.2	11	3.290	4	1.5	...	...	1.00
1846	44.0	+ 3.0	81.8	24.2	57.6	10	1.300	2	1.3	...	...	0.55
1847	39.2	— 1.8	65.1	9.3	55.8	8	2.870	2	4.0	...	...	0.59
1848	41.3	+ 0.3	66.1	22.7	42.4	5	1.455	1	0.5	N 77 W	1.46	4.89 m.
1849	39.0	— 2.0	72.0	15.5	56.5	10	2.665	2	1.7	N 43 W	3.14	7.50
1850	37.9	— 3.1	65.7	18.0	47.7	7	4.720	2	1.1	N 39 W	1.12	7.64
1851	41.3	+ 0.3	59.3	25.8	33.5	11	2.295	3	1.2	N 14 E	2.52	8.07
1852	38.2	— 2.8	53.8	20.0	33.8	6	1.990	4	9.4	N 23 E	2.44	6.68
1853	41.9	+ 0.9	65.7	25.0	40.7	10	2.625	1	1.0	N 12 W	1.95	5.20
1854	41.0	0 0	64.5	20.2	44.3	12	2.685	4	2.7	N 50 E	2.57	6.81
1855	42.4	+ 1.4	69.4	10.7	58.7	8	2.030	3	1.6	N 36 W	3.99	7.57
1856	42.3	+ 1.3	72.2	14.2	58.0	13	2.780	3	0.1	N 29 E	1.64	6.05
1857	35.4	— 5.6	52.0	5.9	46.1	10	1.755	11	12.9	N 60 W	4.15	10.24
1858	41.5	+ 0.5	65.2	21.8	43.4	13	1.642	2	0.1	N 14 W	1.64	9.57
1859	39.5	— 1.5	64.8	22.6	42.2	9	2.627	8	1.2	N 36 W	2.33	10.79
1860	39.5	— 1.5	61.8	19.5	42.3	11	1.282	5	0.3	N 37 W	4.10	10.30
1861	42.0	+ 1.0	67.0	23.8	43.2	12	1.619	4	6.9	N 37 E	2.31	8.90
1862	39.6	— 1.4	68.0	14.5	53.5	10	2.235	4	0.2	N 50 E	2.48	9.77
1863	42.0	+ 1.0	69.0	8.6	60.4	8	2.210	4	1.6	N 14 E	3.75	9.20
1864	40.9	— 0.1	59.4	28.1	31.3	16	3.633	3	8.5	N 41 E	3.39	7.77
1865	43.1	+ 2.1	62.5	23.0	39.5	17	3.972	6	2.0	N 84 W	2.11	8.39
1866	43.9	+ 2.9	71.0	28.5	42.5	7	1.675	2	inap	N 42 W	3.34	7.95
1867	39.5	— 1.5	65.5	25.4	40.1	12	2.147	5	7.2	N 51 W	2.68	7.89
1868	38.0	— 3.0	64.0	9.2	54.8	7	0.990	10	5.3	N 63 W	2.43	9.24
1869	40.1	— 0.9	72.2	16.6	55.6	9	2.965	6	0.5	N 59 W	4.03	8.91
1870	44.6	+ 3.6	67.0	29.6	37.4	9	2.145	2	0.1	N 34 E	4.13	7.03
Results to 1869.	40.90	.....	67.13	18.52	48.61	9.80	2.419	3.73	2.51	N 21 W	2.07	8.15
for 1870.	+ 3.62	.....	— 0.13	+ 11.08	— 11.21	— 0.80	— 0.274	— 1.73	— 2.41	...	...	— 1.12

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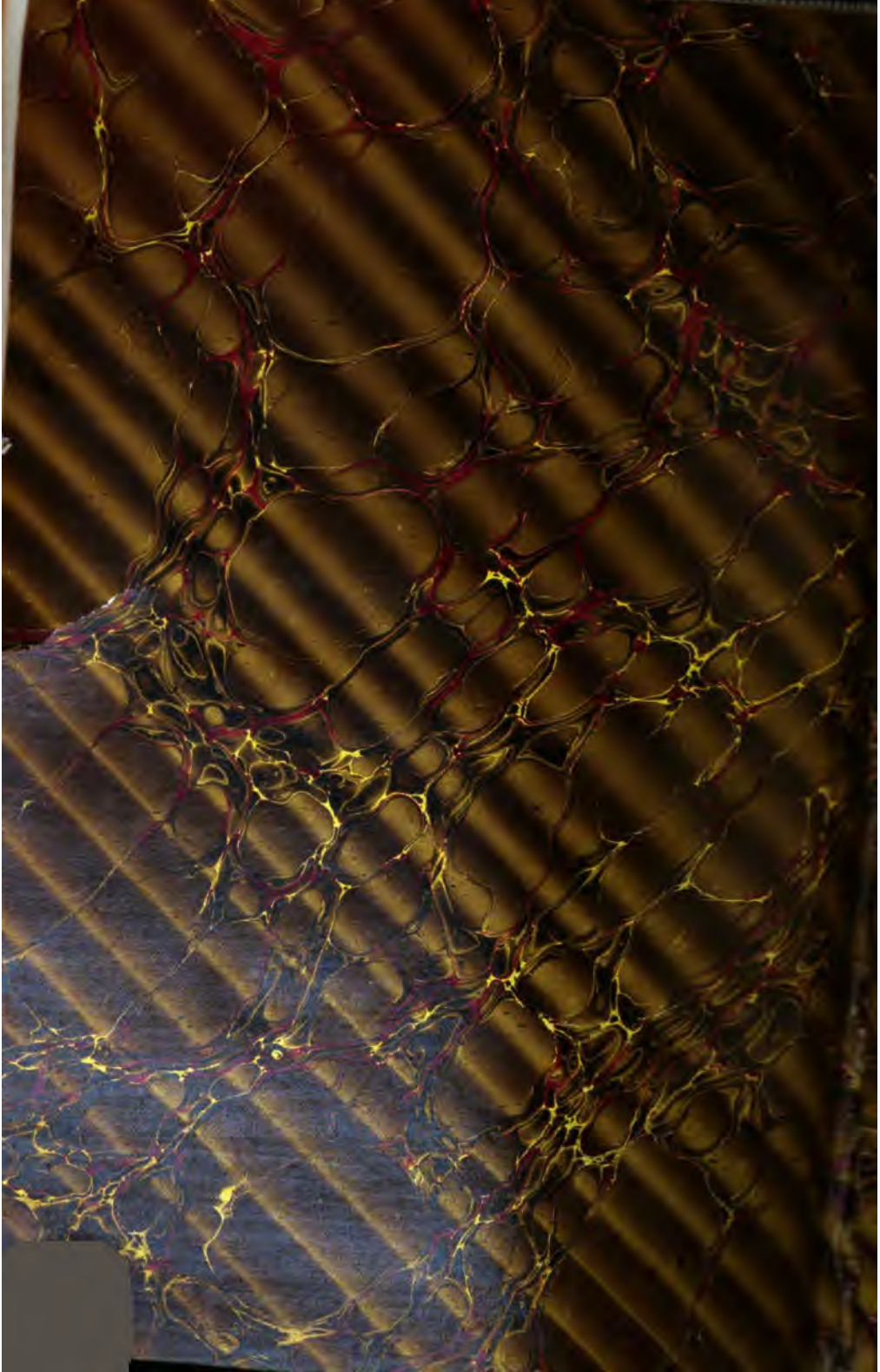

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